REVISED PCB ABATEMENT WORK PLAN METROPOLITAN DISTRICT COMMISSION RESERVOIR NO. 6 FLOCCULATION TANK DECK WEST HARTFORD, CONNECTICUT

PREPARED FOR: Metropolitan District Commission Hartford, Connecticut

PREPARED BY: GZA GeoEnvironmental, Inc. Norwood, Massachusetts

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GZA GeoEnvironmental, Inc.

Engineers and Scientists

December 12, 2011 File No. 01.0019395.50

Kimberly N. Tisa United States Environmental Protection Agency – Region 1 5 Post Office Square - Suite 100 Boston, Massachusetts 02109-3912

Revised Polychlorinated Biphenyl Abatement Work Plan Re:

> Metropolitan District Commission Reservoir No. 6 Flocculation Tank Deck

West Hartford, Connecticut

Dear Ms. Tisa:

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Norwood Massachusetts

02062 781-278-3700

On behalf of the Metropolitan District Commission (MDC), GZA GeoEnvironmental, Inc. (GZA) has prepared this Abatement Work Plan for the removal of caulk and building materials containing polychlorinated biphenyls (PCBs). This work plan has been prepared to support an application under the 40 CFR 761.79(h) and 40 CFR 761.61(a) for USEPA approval of alternative decontamination and sampling approaches for specified materials impacted by specified non-liquid PCB-containing caulk.

Thank you very much for your assistance on this project. We look forward to receiving your approval of this plan. If we can provide anything additional please contact the undersigned at (781) 278-3700, or contact Ms. Sally Keating, P.E. of MDC at (860) 278-7850 extension 3335.

Sincerely,

GZA GEOENVIRONMENTAL, INC.

David E. Leone

Senior Project Manager

Peter H. Baril, P.E. Project Reviewer

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Principal

Sally Keating, MDC cc:

Lori Saliby, CTDEP

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1.00 INTRODUCTION



The Metropolitan District Commission (MDC) operates the Reservoir No. 6 Flocculation Tank in West Hartford, Connecticut as part of the MDC Water Supply System. Figure 1 is a locus plan presenting the location of Reservoir No. 6 Flocculation Tank. Figure 2 depicts pertinent features of the Flocculation Tank deck, which is the subject of this work plan.

During preparation for a planned renovation project, contractors working for the MDC collected samples of caulk from exterior concrete construction joints in the Flocculation Tank deck. Results of analyses conducted on the caulk samples indicated the presence of polychlorinated biphenyls (PCBs) above the allowable concentrations as regulated by the United States Environmental Protection Agency (USEPA) under the Toxic Substance Control Act (TSCA) regulations.

Studies conducted to define the extent of impacts to adjacent materials from the presence of PCB caulk have indicated that abatement and remedial actions are required to achieve compliance with Federal regulations in the Code of Federal Regulations Title 40 Section 761 (40 CFR 761). The required work includes the removal of PCB-containing caulk, and removal of adjacent concrete where laboratory analyses have identified PCB concentrations exceeding the cleanup and compliance criteria of 1 part per million (ppm).

This work plan has been prepared to support an application under the 40 CFR 761.79(h) and 40 CFR 761.61(a) for USEPA approval of alternative decontamination and sampling approaches for specified materials impacted by specified non-liquid PCB-containing caulk. This work plan is subject to the limitations presented in Appendix A.

The MDC representative who will be responsible for this project is Sally Keating. Contact information is provided below:

Sally Keating, P.E.
Manager of Environment, Health and Safety
MDC
555 Main Street
Hartford, CT 06103
(860) 278-7850 ext.3335
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Determination of achievement of acceptance criteria will be based on post-abatement confirmatory bulk sampling. For this project, the acceptance criteria will require that remaining concrete not contain PCBs at concentrations greater than 1 part per million (ppm).

Abatement procedures will consist of the removal of PCB caulk and PCB-impacted adjacent concrete exhibiting PCB concentrations greater than 1 ppm. The work includes the removal of PCB caulk from the main expansion joint orientated approximately eastwest across the length of the Flocculation Tank deck; from several smaller north-south orientated expansion joints which terminate at the main joint; from around concrete pads for the two drywell access hatches; from along the concrete stairs leading to the flash



mixers; from along an electrical bus line leading to a nearby shed; and the removal of certain portions of concrete directly adjacent to the PCB-containing caulk seams. Specifically, concrete within 3 inches horizontally and 2 inches vertically of the PCBcontaining caulk seams will be removed (this includes concrete 2 inches above and 2 inches below the caulk seam at the telescopic valve and observation manhole pads); and the upper ½-inch of the concrete deck adjacent to the PCB-containing caulk will be scarified to a distance of 16 inches from the caulk seam or until a vertical barrier is encountered, whichever is less distant. In addition, the concrete pads for the drywell access hatches and the concrete stairs leading to the flash mix tank will be entirely removed and replaced. PCB abatement work at the Flocculation Tank deck will be conducted utilizing engineering controls to minimize the potential for migration of PCBcontaining dust. At no point will the abatement contractor mechanically cut into the caulk or PCB-impacted concrete without the use of vacuum attached capture devices. Caulk and removed material containing caulk residue; including concrete from within specified distances of a caulk seam, will be disposed of as PCB bulk product waste exhibiting PCBs at or greater than 50 ppm at a TSCA approved disposal facility. Other concrete debris generated during the work which has been demonstrated to exhibit PCB concentrations less than 50 ppm including concrete not within the specified distances of a caulk seam, the flash mix tank stairs and the concrete pads for the two drywell access hatches, may be disposed of at an acceptable subtitle D facility.

2.00 CASE NARRATIVE

The following sections present available information regarding the Flocculation Tank deck and the extent of PCB impacts.

2.10 FLOCCULATION TANK

The Reservoir No. 6 Flocculation Tank is a component of the drinking water treatment system for the Hartford, Connecticut area. Flocculation is one step in the drinking water treatment process where water is treated to promote cohesion of smaller particulate matter into larger collections, which can then be more easily removed. The settling compartments' reinforced concrete roof slab, referred to as the Flocculation Tank deck, is a two-way structural slab supported by longitudinal and transverse reinforced concrete beams of various depths. The roof slab is located along the south side of the flocculation basin and is approximately 8 inches thick, approximately 250-feet long and 15-feet wide. A 1-inch wide expansion joint is orientated approximately east-west along the length of the roof between the south wall of the Flocculation basin, and the north side of the settling compartment roof slab. Reinforced concrete stairs that provide access to the flash mix tanks are located on the south side of the mix tanks and to the west of the flocculation basin. Photographs of pertinent site features are included as Appendix B.

2.20 INVESTIGATIONS BY TIGHE & BOND.

GZA was provided with a copy of a Technical Memorandum prepared by Tighe & Bond (T&B) dated August 5, 2009, documenting a visual inspection of the Flocculation Tank deck, and the collection and analysis of caulk and concrete dust samples for PCBs. Results

of the testing indicated that caulk in the expansion joint spanning the roof of the tank contains 1,550 ppm PCBs, and that concrete samples collected from adjacent to the caulk seam, and adjacent to similar caulk along the stairway, contain PCBs at concentrations up to 19.13 ppm. Because the concrete samples appeared to have been composited, which is inconsistent with the USEPA protocol for such sampling, results from these samples were discarded in favor of the results of samples collected by GZA, which are discussed in detail in the following section. A copy of the T&B report is included as Appendix C.



2.30 INVESTIGATIONS BY GZA

Investigations by GZA included a survey to identify the extent of existing caulk at the Flocculation Tank deck, the collection of additional caulk samples to confirm and expand on the T&B results, and the collection of concrete samples from locations adjacent to the PCB-containing caulk. Sample locations are indicated on the attached Figure 2. Analytical results are summarized on Table 1 and Table 2, and laboratory analytical reports are included as Appendix D. Seven caulk samples were obtained: two caulk samples (Flocc. Tank #2 and East of Flocc. Tank #4) were obtained from the main expansion joint to confirm T&Bs findings and determine if conditions were consistent along the joint; two caulk samples (Expansion Joint #2 and Expansion Joint #3) were obtained from smaller joints which are perpendicular to and intersect the main joint; one sample (Dry Well #2) was obtained from the perimeter of a concrete pad for a drywell access hatch (see Photograph No. 3); one sample (Bulkhead #2) was obtained from the perimeter of a bulkhead at the northeastern corner of the tank deck; and one sample (Bus Line by Electrical Shed, see Photograph No. 5) was obtained from the westernmost portion of the deck, near the electrical shed.

Results of the analyses reported PCB concentrations in the caulk ranging from non-detect to 19,850 ppm. The highest concentrations were reported in caulk at the main expansion joint and intersecting joints. The PCB concentration in the samples obtained from the drywell and bus line were 3,240 and 56.5 ppm, respectively. PCBs were not detected in the caulk sample collected from around the bulkhead.

Based on results from the caulk sampling and analysis, GZA collected concrete samples from locations in direct contact with the caulk: EXP #1 was collected from adjacent to the main expansion joint; EXP #2 and EXP #3 were collected from the intersecting joints, adjacent to sampling locations of Expansion Joint # 2 and Expansion Joint #3; DW2 was collected from adjacent to the concrete pad for the access hatch to Drywell No. 2; Deck Stairs was collected on the basin side of the stairs (see Photograph No. 2); and Bus Line was collected adjacent to the Bus Line by Electrical Shed sample. Only limited access was available to the Bus Line area (see Photograph No. 5); therefore only one sample was collected, in this area. Determination of the extent of required abatement in this area will rely on extrapolation from other areas, verified by post-abatement sampling results. Likewise, only limited access to the concrete on the basin side of the expansion joint (see Photograph Nos. 7 & 8) was available due to the presence of a metal railing and the basin itself. Extent (distance and depth) of PCB impacts to concrete from the deck side of the joint will be extrapolated to the basin side. MDC informed GZA that it intends to dispose of the prefabricated concrete stairs and the concrete pads for the drywell access hatches in their entirety as PCB remediation waste. Therefore samples were not collected from these concrete components.



Concrete sampling was conducted in general accordance with USEPA's standard operating procedure for the collection of concrete dust samples. Samples were collected from distinct sampling intervals based on distance from the caulk. In general, concrete dust samples were collected at distances 1 inch, 3 inches, 6 inches and 12 inches from the caulk seam, and at varying depth intervals. At the DW2 location, concrete samples were also obtained from 16 inches and 24 inches away from the caulk seam. Site observations and previous sampling data suggested that the caulk may have been smeared across the concrete surface either during installation, or since. Based on this assumption, at certain locations, GZA did not include the top 1/8-inch of the concrete surface in the samples. This was conducted with the understanding that a portion of the uppermost surface of concrete at the Flocculation Deck would be removed during abatement. This resulted in sample depths intervals for the 1 inch locations from each caulk seam being 1/8" to ½", ½" to 1", 1" to 1½", and 1½" to 2". The depth intervals for the 3-inch and 6-inch locations from each caulk seam were 1/8" to ½" and ½" to 1". At the 12" locations, GZA obtained samples from the 0-1/4" depth interval. At DW2, additional samples were obtained from the 12" location ($\frac{1}{4}$ " to $\frac{3}{4}$ "), the 16" location ($\frac{1}{8}$ "- $\frac{1}{2}$ ") and the 24" location ($\frac{1}{8}$ - $\frac{1}{2}$ "). Samples were submitted to Alpha Analytical, Inc. (Alpha), of Westborough, Massachusetts for analysis for PCBs by USEPA Method 8082, utilizing manual Soxhlet extraction by USEPA Method 3540C. The samples were analyzed in an iterative manner, with the shallow samples closest to the caulk seam analyzed first, and deeper/more distant samples analyzed only if previous sampling indicated results greater than 1 ppm. Caulk and concrete sampling results are presented on Tables 1 and 2, respectively. The analytical results for the initial sample obtained at EXP #3 (1 inch from the seam and 1/8" to ½" deep) indicated a total PCB concentration of 5,240 ppm. It is GZA's opinion, given the anomalously high result, that the sample was likely impacted by residual caulk, and not indicative of the actual PCB concentration in the concrete. Additional sample material was obtained from this area and analyzed, with the result being 7.59 ppm. As noted below, concrete from within 3-inches horizontally of a caulk seam will be disposed of as PCB bulk product waste given the potential for residual caulk.

Although this iterative approach resulted in several samples being analyzed outside of their hold times, It is GZA's opinion that this approach is valid for characterization purposes, especially considering the plans for post-abatement confirmation sampling. Results show minimal PCB impact to the adjacent concrete, with PCBs detected at concentrations greater than 1 ppm detected at the main and intersecting expansion joints only at the ½" - ½" and ½" - 1" samples. At the DW2 sample location, additional impacts were detected in surficial samples out to 12" from the caulk seam. PCBs greater than 1 ppm were not detected in the sample near the deck stairs closest to the caulk seam. Because of access limitations, only one sample was obtained near the electrical bus line; however, results from this sample indicated a total PCB concentration of 2.33 ppm.

2.40 SUMMARY OF PCB IMPACTS

The Flocculation Tank deck has been impacted by the presence of PCBs. The approximately 280 linear feet of expansion joint caulk exhibits the highest concentrations of PCBs observed, ranging from 12,550 ppm to 19,850 ppm, and is the source of impacts to other materials through either direct contact or contaminant migration.



In addition to the caulk, concrete adjacent to the caulk has been impacted by PCBs. In general, PCB impacts are limited to less than 3" from the caulk; however, sampling results have indicated additional impacts to shallow concrete at locations further from the caulk seam. These shallow PCB impacts are believed to potentially result from smearing of the caulk, either during the initial installation, or by subsequent foot traffic. Where access limitations precluded the collection of sufficient samples, GZA has assumed conditions to be consistent with the worst-case condition identified in similar situations elsewhere at the site. Specific locations where access issues limited the scope of sampling include the areas adjacent to the electrical bus line, and the basin side of the main expansion joint.

2.50 OVERVIEW OF ABATEMENT GOALS

The overall goal of the abatement activities of this work plan is to accomplish complete removal of the source of PCBs at the Flocculation Tank deck and to achieve the appropriate acceptance criteria for impacted materials and surfaces.

The source removal and abatement activities will be conducted to achieve compliance with USEPA TSCA requirements and to protect both public health and the environment. PCB bulk product waste and PCB remediation waste will be removed, handled, transported, and disposed of in compliance with federal and state regulatory requirements.

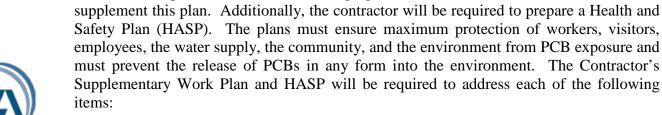
The Flocculation Tank deck, based on current and anticipated future activities, readily meets the definition at 40 CFR 761.3 of a Low Occupancy area. The anticipated maximum cumulative personnel presence for one worker on the deck would not exceed 24-hours per year. However, because of the proximity of the drinking water supply, exposed and accessible materials and surfaces at the deck will be abated to the acceptance criteria of 1 ppm PCBs. PCB-containing caulk will be removed; concrete surfaces within 3 inches horizontally, and 2 inches vertically of the PCB-containing caulk seam will be removed (this includes concrete 2 inches above and 2 inches below the caulking seam at the telescopic valve and observation manhole pads), and the upper ½-inch of the concrete deck adjacent to the PCB-containing caulk will be scarified to a distance of 16 inches from the caulk seam or until a vertical barrier is encountered, whichever is less distant.

The restoration work to be conducted as part of the abatement project, as discussed further in Section 12.00 below will include restoring the concrete surfaces to serviceable condition.

3.00 REGULATIONS, PERMITS AND QUALIFICATIONS

The contractor selected by MDC to abate the specified PCB-impacted surfaces at the Flocculation Tank deck will be responsible for obtaining permits necessary to execute the abatement work. The contractor will be responsible for adhering to applicable federal, state, and local laws and regulations and notifications.

3.10 STANDARD OPERATING PROCEDURES





 A detailed description of the means and methods of installing, maintaining, and verifying engineering controls and work practices to minimize the generation and prevent the release of airborne contamination from the work area. The controls and practices to be instituted during abatement activities must keep workers' exposures to PCBs below OSHA's permissible exposure limit and ensure no release of PCBs from the work area to the surrounding area, to the water supply basins, or to the general environment;

MDC will require that the contractor prepare a written Contractor's Work Plan to

- A detailed description of the means and methods of establishing, maintaining, and verifying the containment, or approved alternate method to prevent the release of emissions from the work area;
- A description of planned or required personnel protection equipment (PPE) including protective clothing, respiratory protection equipment, and others, as may be required by OSHA regulations;
- A description of the minimum requirements for safe work practices in the workplace, including exclusion of eating, drinking, and smoking: tool decontamination practices; and PPE management requirements;
- A description of requirements for end of work shift decontamination and cleaning procedures;
- A description of the procedures to be followed for the handling, storage, transport, and disposal of appropriately classified PCB waste in a manner that minimized exposure and that complies with federal, state, and local regulations regarding PCBs;
- The identification of primary and alternate disposal sites for PCB waste; and
- Contingency plans to address the potential for accidental spills and/or contamination in the work area or outside the work area.

In addition, MDC has indicated that the selected contractor will be required to capture all water used during concrete cutting operations in order to prevent impacts to the Flocculation Tanks. This requirement will be enforced regardless of whether or not the concrete cuts are in an area impacted by PCBs. The work will be completed in phases to allow individual tanks to be drained, further minimizing the potential for impacts.

3.20 TRAINING AND CERTIFICATION



Personnel performing abatement activities at the Flocculation Tank deck will be required to have had training, medical examinations, and respirator fit testing (if respirator use is required) as specified by OSHA. The contractor will be required to have a competent person at the job site at all times that work is ongoing. Site-specific hazards and hazards associated with the handling and disposal of PCB products must be effectively communicated to all workers to minimize potential exposures. Completion of a Hazard Communication program in conformance with the elements of 29 CFR 1926.59 is required. In addition, the contractor must provide proper training and equipment for all safety-related issues. Additional health and safety requirements are presented in Section 14.00.

4.00 SCOPE AND SCHEDULE

The overall goal of the abatement activities of this work plan is to achieve the appropriate acceptance criteria for the Flocculation Tank deck surfaces impacted by PCBs.

The abatement activities will be conducted to achieve compliance with USEPA TSCA requirements and to protect both public health and the environment. PCB bulk product and remediation waste will be removed, handled, transported, and disposed of in compliance with federal and state regulatory requirements.

4.10 SCOPE OF ABATEMENT

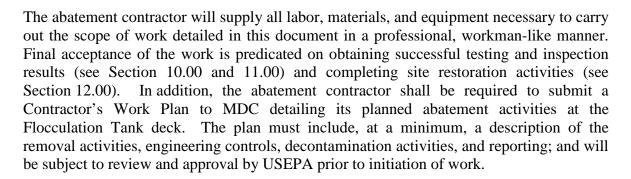
The abatement scope of work for the Flocculation Tank deck addresses identified PCB-containing caulk, PCB-contaminated concrete adjacent to the caulk and remediation waste associated with the concrete deck. The work will consist of the following general elements:

- Site isolation and protection.
- Source containment and removal.
- Material disposal.
- Decontamination and/or removal of PCB residues.
- Acceptance testing and verification.
- Site restoration.

Specific abatement items are as follows:

- 1. Removal and disposal as PCB bulk product waste of PCB-containing caulk from the main expansion joint and two perpendicular expansion joints, from the bus line by the electrical shed, from the stairs to the flash mix tank, and from around the two concrete pads for the drywell access hatches;
- 2. Removal and disposal as PCB bulk product waste (due to the potential for residual caulk to be present) of concrete within 3 inches horizontally, and 2 inches vertically of the PCB-containing caulk seams described in Item No. 1, including the concrete

- 2 inches above and 2 inches below the caulking seam at the telescopic valve and observation manhole pads;
- 3. Removal and disposal as PCB remediation waste containing less than 50 ppm PCBs of the remaining portions of the stairs to the flash mixer and the concrete pads for the drywell access hatches located on the Floculation Tank deck; and
- 4. Removal and disposal as PCB remediation waste containing less than 50 ppm PCBs of the top ½" of the remaining concrete surface of the Flocculation Tank deck from 3 inches to 16 inches from the former PCB-containing caulk seams, or until a vertical barrier is encountered, whichever is less distant.



4.20 SCHEDULE

Work shall be performed within MDC's allocated time period for abatement activities. The contractor will be required to complete the work in accordance with the schedule requirements of the contract.

5.00 IMPACTED MATERIAL QUANTITIES

Impacted caulk includes caulk in the main expansion joint (including caulk adjacent to the concrete pads for telescopic valves and observation manholes), in the perpendicular expansion joints, around the concrete pads for the drywell access hatches, along the bus line and along the stairs to the flash mix tank. Impacted concrete includes concrete within 3 inches horizontally, and 2 inches vertically, of the PCB-containing caulk seams described above. The main expansion joint is approximately 250 feet long, resulting in approximately 500 linear feet of contact with adjacent concrete. The two perpendicular expansion joints are each approximately 15 feet long, resulting in another 60 linear feet of contact with adjoining concrete. The remaining caulk seams at the concrete pads for the drywell access hatches, bus line and stairs account for an additional, approximately 60 linear feet of contact with adjoining concrete. The total linear footage of impacted caulk is approximately 340 feet; and the total linear footage of concrete in contact with caulk is approximately 620 linear feet. Removal of a 3-inch by 2-inch section of concrete along these seams will result in generation of approximately 25 cubic feet of concrete.



Removal of the upper ½ inch of concrete within 16 inches of the PCB-containing caulk seams on the Flocculation Tank deck will result in generation of approximately 27 cubic feet of concrete.

In addition, MDC had decided to remove the concrete stairs to the flash mix tanks, and the concrete pads for the drywell access hatches as part of the abatement activity.



6.00 SITE PREPARATION, CONTAINMENT, AND ISOLATION

This section provides a general description of the site preparation and containment requirements for the abatement project. The means and methods of accomplishing these requirements will be determined by the selected abatement contractor and will be detailed in the Contractor's Supplementary Work Plan.

6.10 FLOCCULATION TANK DECK ABATEMENT

In order to protect the Flocculation Tank basins and adjoining areas, and to prevent the potential release of PCB-impacted material or debris from the work area; PCB abatement will be conducted under full containment or utilizing an alternate localized containment method proposed by the contractor and accepted by MDC and USEPA, that has been demonstrated to positively preclude the release of any emissions resulting from the abatement work.

The contractor will be required to fully establish the work area containment or approved suitable alternative prior to initiating any work that will disturb PCB-impacted materials. Once the containment is in place, the abatement work may commence.

Caulk disturbance and removal activities must be accompanied by rigorous HEPA vacuum collection before, during, and after removal. Removed caulk must be placed directly in 6-mil plastic bag lined buckets. Prior to its removal from the containment or from the immediate work area for delivery to the PCB container, PCB bulk waste must be double bagged, securely sealed and appropriately labeled.

Caulk removal will be conducted with appropriate tools and sufficient effort to leave only strongly adhering residue on the concrete surface. At the completion of bulk caulk removal activities, porous concrete surfaces will be removed, scarified, or ground as provided below.

6.20 WASTE CONTAINMENT

The use of containers will be required for short term on-site storage and off-site transport of PCB bulk product and PCB remediation wastes. However, the abatement contractors Supplementary Work Plan will provide final details. Containers will be lined, covered and secured. Container location will be subject to approval by MDC. PCB waste containers will be placarded on all sides as containing PCB waste with markings meeting the requirements of 40 CRF 761.45. Containers will be maintained, secured, and covered,

except during active operation of loading waste. PCB bulk product and PCB remediation wastes will be stored in accordance with applicable USEPA TSCA regulations.

7.00 PCB MATERIAL MANAGEMENT



In addition to the work area containment provisions discussed above, the following minimum requirements will be followed for abatement work and waste material handling. The actual means and methods and final details of waste management, segregation, handling, and securing will be provided, for approval by USEPA and MDC, in the Contractors Supplementary Work Plan.

7.10 PCB BULK WASTE MATERIALS

PCB bulk waste caulk will be removed from Flocculation Tank deck in a manner that will avoid the generation of dust and debris. Caulk removal activities will be accompanied by the application of HEPA vacuum collection to capture any dust or debris created or released by the removal activity. Once removed, these materials shall be place into a lined temporary container for transport to the PCB container. Five to ten-gallon buckets fitted with 6-mil plastic bag liners, or similar containers as identified in the contractor's Supplementary Work Plan, will be used as temporary containers for removed caulk. When each bucket is filled to approximately 80 percent of capacity, the plastic liner will be securely tied, removed from the bucket and placed within a larger (35- to 50-gallon) 6-mil plastic bag lined barrel within the containment work area. Prior to removal of accumulated PCB waste from the containment work area, the wastes will be required to be securely double bagged and labeled in accordance with 40 CFR 761.40.

Caulk, concrete removed from within 3 inches horizontally and 2 inches vertically of a caulk seam (due to the potential for residual caulk to be present) and dust and debris associated with these abatement activities will be designated as PCB bulk waste. PCB bulk product wastes generated during the work of this Abatement Work Plan will be disposed of at a TSCA permitted landfill.

7.20 PCB REMEDIATION WASTE

The primary PCB remediation wastes generated by this abatement project will be concrete associated with the remaining portions of the stairs leading to the flash mix tank, the concrete pads for the drywell access hatches, and contaminated dust and/or debris generated by the scarification or cutting of concrete surfaces not in contact with PCB caulk.

Any liquids, such as water generated during cutting or scarifying of concrete or during decontamination of tools, will be collected, contained, and analyzed for appropriate disposal. At the end of each work shift, PCB waste will be removed from the containment work area and secured in the PCB waste container. PCB bulk product waste and PCB remediation waste items will be stored for disposal in accordance with 40 CFR 761.40 and 761.65. PCB remediation wastes generated during the work of this Abatement Work Plan and containing less than 50 ppm PCBs, along with non-liquid

cleaning materials and PPE may be disposed of at an appropriately permitted lined Subtitle D landfill.

8.00 WASTE DISPOSAL



Disposal of all waste shall be in accordance with applicable state and federal regulations and sent to a licensed facility or facilities that will receive and retain PCB bulk product waste and PCB remediation waste, in accordance with USEPA regulations under 761.61 and 761.62. All PCB bulk product waste and PCB remediation waste will be kept separate from other ordinary construction waste streams that the contractor may generate. Sally Keating or her designee will be responsible for reviewing and signing all necessary shipping papers that designate MDC as the waste generator. Copies of all bills of lading, waste shipment records, manifests, certificates of disposal, and other documentation will be provided by the abatement contractor to MDC as proof of proper waste disposal. Copies of all manifests shall be provided to the USEPA as part of the final summary report.

PCB bulk product and PCB remediation wastes will be stored in accordance with applicable USEPA TSCA regulations. The contractor will ensure compliance with storage and labeling requirements described in 761.40 and 761.65. All PCB bulk waste and PCB remediation wastes will be double bagged as described above prior to transfer into the lined PCB waste containers.

The PCB bulk product waste and PCB remediation waste shall be disposed of in accordance with 40 CFR 761.62 and 761.61, respectively, at landfill(s) approved for such disposal. The name of the landfill(s), along with appropriate documentation to verify that it is capable of accepting PCB waste in accordance with these requirements, will be submitted to USEPA as part of the abatement contractor's Work Plan.

9.00 ABATEMENT PROCEDURES

Contractors must obtain proper permits and conduct work in compliance with applicable regulations, including TSCA, RCRA, and any other applicable federal, state, and local laws and regulations. Abatement procedures for the work consist of the removal of identified PCB-containing materials.

9.10 BULK CAULK REMOVAL

Caulk disturbance and removal activities must be accompanied by rigorous HEPA vacuum collection before, during, and after removal. Removed caulk must be placed directly in 6-mil plastic bag lined buckets. Prior to its removal from the containment or from the immediate work area for delivery to the PCB container, PCB bulk waste must be double bagged, securely sealed and appropriately labeled.

Caulk removal will be conducted with appropriate tools and sufficient effort to leave only strongly adhering residue on the concrete surface.

At the completion of bulk caulk removal activities, porous concrete surfaces will be removed, scarified, or ground as provided below.



9.20 CONCRETE SURFACE ABATEMENT

After bulk caulk removal has been concluded, concrete formerly in contact with the caulk will be removed. Concrete will be cut or otherwise broken to yield concrete pieces of manageable size and weight for removal, transport, and disposal. Removed concrete will be loaded into a lined gondola or similar transport container within the containment and securely covered before removal from the containment.

Following removal of the concrete formerly in contact with PCB-containing caulk, the remaining concrete surface of the Flocculation Tank deck within 16 inches of each PCB-containing caulk seam, or until a vertical barrier is encountered, whichever is closer, will be abraded or scarified to a depth of ½ inch. The dust and debris generated by these processes will be continuously collected by an integrated dust collection system fitted with HEPA filtration.

Concrete cutting, breaking, abrading, or scarifying that occurs on the Flocculation Tank Deck must be conducted within the negative pressure containment or other approved containment system proposed in the Contractor's Supplementary Abatement Plan. If water is used in conjunction with concrete cutting and to control dust within the containment it must be kept to a minimum quantity and will be controlled and captured through the use of water dams and wet-vacs. No release or discharge of water will be allowed. Captured cutting or dust-control water must be contained, sampled, analyzed and properly disposed of off-site.

Following completion of abatement at each work area and removal of material from the containment, a complete cleaning of the containment area including HEPA vacuuming of surfaces and removal of debris is required prior to containment inspection and clearance for dismantling or relocation.

10.00 ABATEMENT VERIFICATION AND ACCEPTANCE

Verification will be conducted to demonstrate that the appropriate acceptance criteria for each material and location have been met. The abatement contractor will be required to retain the services of an independent testing laboratory to collect and analyze samples of the materials at the frequencies specified below. The laboratory must be certified by the Connecticut Department of Public Health. Analyses to verify achievement of 1 ppm acceptance criteria will be conducted using USEPA approved methods for extraction and analyses of PCBs. The approved methods required to be utilized are Method 3540C Soxhlet Extraction followed by Method 8082 PCB analysis. Laboratory detection limits will be required to be less than half the acceptance criteria for each sample type. Quality

assurance/quality control (QA/QC) sampling will be required in accordance with Section 11.00.

10.10 VERIFICATION SAMPLING AND ANALYSES



As described above, approximately 620 linear feet of concrete is in contact with PCB-containing caulk and will require removal. The proposed removal includes cutting concrete 3 inches horizontally and 2 inches vertically from the caulk, after the caulk has been removed. Verification sampling will be based on linear footage, with one sample obtained from the resulting vertical surface, and one from the horizontal surface, at an interval of one sample per 30 linear feet. This will result in collection and analysis of 42 confirmatory samples.

After removal of the PCB-impacted caulk and adjoining concrete, the remaining concrete surface of the Flocculation Tank deck within 16 inches of each PCB-containing caulk seam, or until a vertical barrier is encountered, whichever is closer, will be scarified to a depth of ½-inch. Taking into account vertical obstructions where smearing is not anticipated, along with differing conditions across the tank deck (i.e. the concrete on the basin side of the tank deck does not extend the full 16 inches), the estimated surface area to be scarified is approximately 650 square feet. Verification sampling will be based on square footage, with one sample obtained every 50 square feet. This will result in collection and analysis of 13 confirmatory samples.

10.20 CONTINGENT ABATEMENT AND RESAMPLING

Results of verification samples are anticipated to demonstrate that abated surfaces meet the specified acceptance criteria. In the event that analytical results indicate an exceedance of the acceptance criteria, additional concrete will be removed in the area represented by the failed sample, and additional verification samples will be collected at the specified initial frequencies.

11.00 QUALITY ASSURANCE/QUALITY CONTROL

The quality assurance objectives, and the measurement and performance criteria established for this project are discussed below. The analytical laboratories and the analytical methods to be utilized will be required to provide quantitation limits of 0.5 ppm or less. Table 3 presents a summary of the data quality criteria and measurement frequency for this abatement project.

The ultimate objective of this project is to remove PCB impacted materials as specified in this plan. The data collected as part of this project must be of sufficient quality to support a conclusion that the remaining Flocculation Tank deck surfaces meet the acceptance criteria.

Data quality objectives will be measured using several criteria, including precision, accuracy, representativeness, comparability, completeness, and sensitivity parameters. Laboratory and field sampling documentation will be used to assess these parameters.

11.10 PRECISION



Precision is the degree of agreement among repeated measurements of the same characteristic under the same or similar conditions. One duplicate sample will be collected for every ten samples collected or 10% of the sample set. No less than one duplicate will be collected, regardless of the number of samples. The identity of duplicate samples will not be revealed to the analytical laboratory. The target precision for field duplicates is $\pm 45\%$, indicating good reproducibility. Because of the anticipated low concentrations of PCBs in the verification samples, a precision of 45% will be an acceptable indicator for reproducibility. Precision levels outside of the 45% acceptance criteria will not invalidate the sample data set, but will be flagged to caution users about variability within the data. Matrix spike/matrix spike duplicate is also a measure of precision and will be assigned at a frequency of one pair per 20 field samples of like matrix.

11.20 ACCURACY

Accuracy is the extent of agreement between an observed value (sample result) and the accepted or true value of the parameter being measured. The submittal of one field or equipment blank for each sample set will be required. The appropriate laboratory QC program and analytical method will determine acceptable recoveries. The laboratory will utilize matrix spiked samples; laboratory control samples, blanks, and surrogates to assure accuracy. Recoveries outside the acceptable limits will not invalidate the sample data set; however, the data will be flagged to warn of its reliability.

11.30 REPRESENTATIVENESS

Representativeness is a qualitative term that describes the extent to which a sampling design adequately reflects the environmental conditions of a site. The samples will be selected to represent the various field conditions and the materials and locations that have been abated.

11.40 REASONABLENESS

Data will be evaluated for reasonableness based on existing knowledge of source location and containment distribution in the project areas. The verification samples are anticipated to verify achievement of the acceptance criteria. Any data that substantially falls outside these expected levels will be further evaluated for accuracy and additional data collection may be required.

11.50 COMPLETENESS

Completeness is a measure (percentage) of the amount of valid data obtained meeting the data quality objectives. Valid data are data that meet the data quality indicators. The acceptable completeness percentage for this project is 90%.

12.00 FACILITY RESTORATION



Following completion of abatement work, including verification of the achievement of the appropriate acceptance criteria for each material at each location discussed in Section 11.00, the project locations will be restored to serve their intended functions.

13.00 ABATEMENT CONTRACTOR'S HEALTH AND SAFETY PLAN

The abatement contractor will be required to submit a written HASP that details engineering controls, practices and procedures, protective equipment, and training that will be used to control and minimize exposures. In addition, the plan will include provisions for relevant health and safety issues.

The safety plan shall include copies of training materials and training records for those who will be working on-site at any time during the abatement project. If new employees are hired during the course of the work, they must receive training prior to working on-site and evidence of this training must be provided to the project team.

Applicable federal and state OSHA standards and regulations to insure worker safety will be enforced during the abatement process. The following list represents some, but not necessarily all, of the items that must be addressed in the contractor's HASP. The contractor is responsible for determining which items apply and how best to implement them.

- 1. Safety and health hazard assessment;
- 2. Site access and accountability including sign-in and sign-out procedures;
- 3. Procedures for emergency medical treatment and on site first aid;
- 4. Map indicating route to hospital for emergency medical treatment;
- 5. List of emergency contacts including home and cell phone numbers;
- 6. Physical hazard evaluation and abatement including the following:
 - Respiratory Protection
 - Fall Protection
 - Personal Protective Equipment
 - Lockout/Tagout
 - Machine Safety/ Equipment Operation
 - Ladder/Scaffolding Safety
 - Electrical Safety
 - Housekeeping (slips, trips, falls)
 - Injury Reporting
 - First Aid
 - Fire Safety
 - Cold and Heat Stress
 - Confined Space Entry
- 7. Copies of Material Safety Data Sheets for all chemicals to be used for this project;

8. Recordkeeping requirements including injury and accident report forms.

13.10 PUBLIC SAFETY



The abatement work for this project will occur in close proximity to an active drinking water supply system. The contractor will be required to demonstrate how his proposed Contractor's Work Plan and all the elements thereof will ensure public safety during all phases of the abatement work. Contractor will be required to implement containment measures designed to protect workers, occupants, the water supply and the environment from the release or emission of PCB-containing materials in any form.

Proper control, hygiene, and decontamination procedures must be followed to prevent the release of PCBs in any form into the environment.

14.00 FINAL APPROVAL AND ACCEPTANCE

Final approval and acceptance of the abatement work will depend on the following conditions being met:

- The specified removal and abatement has been completed and demonstrated by successful laboratory analyses as described in Section 10.00.
- The results of verification sampling meet the standards specified in Sections 10.00 and 11.00
- The site has been restored.
- Any additional conditions imposed on abatement work by USEPA have been met.
- A complete and accurate compilation of waste manifests for the waste removed from the site has been received and reconciled.

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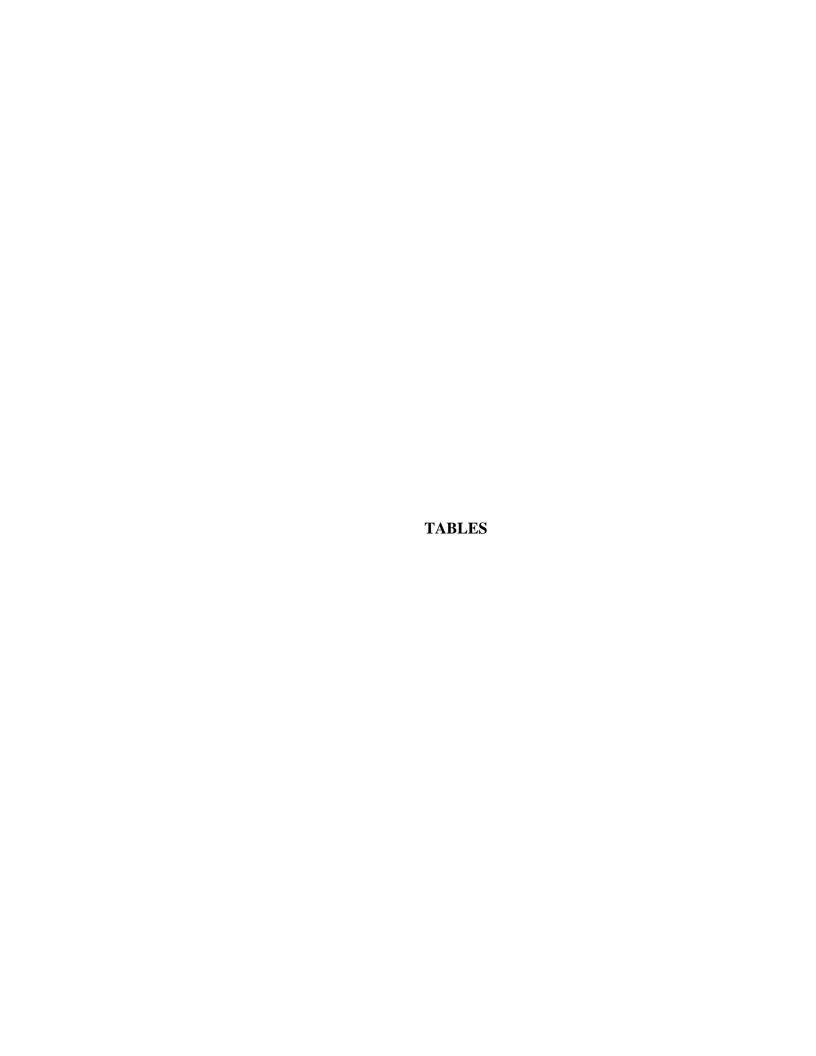


Table 1
PCB Results in Caulk
MDC Reservoir No. 6 - Flocculation Tank Deck
West Hartford, Connecticut

GZA File No. 01.0019395.50 Page 1 of 1 12/13/2010

Sample Name	Sample Date	Matrix	Units	Aroclor 1254	Aroclor 1260	Aroclor 1262	total
Expansion Joint #2	1/21/2010	Caulk	mg/kg	4,010	<200	8,540	12,550
Expansion Joint #3	1/21/2010	Caulk	mg/kg	<3030	<2020	14,000	14,000
Bulkhead #2	1/21/2010	Caulk	mg/kg	<14.6	<9.71	<4.85	ND
Dry Well #2	1/21/2010	Caulk	mg/kg	<291	<194	3240	3240
East of Flocc. Tank #4	1/21/2010	Caulk	mg/kg	6280	<198	6720	13000
Bus Line by Electric Shed	1/21/2010	Caulk	mg/kg	22.2	<1.92	34.3	56.5
Flocc Tank #2	1/21/2010	Caulk	mg/kg	8,750	<2000	11,100	19,850

Table 2

PCB Results in Concrete Dust Samples MDC Reservoir No. 6 - Flocculation Tank Deck West Hartford, Connecticut

All result in mg/kg (ppm)

			Distance				
	Depth	1"	3"	6"	12" (0-1/4")		
EXP #1	1/8"-1/2"	1.106	0.498	ND			
	1/2"-1"	5.8	ND				
	1"-1 1/2"	ND					
	1 1/2"-2"						
		1"	3"	6"	12" (0-1/4")		
	1/8"-1/2"	11	0.38	ND			
EXP #2	1/2"-1"	15.19	0.394				
LXI #Z	1"-1 1/2"	0.509					
	1 1/2"-2"						
		1"	3"	6"	12" (0-1/4")		
	1/8"-1/2"	5240 ¹ /7.59 ²	ND				
EXP #3	1/2"-1"	ND					
	1"-1 1/2"						
	1 1/2"-2"						
						_	_
		1"	3"	6"	12" (0-1/4")	16" (1/8-1/2")	24" (1/8-1/2")
	1/8"-1/2"	32.2	0.045	3.703	3.53	ND	
DW2	1/2"-1"	13.37	ND	ND	ND (1/4"-3/4")		
	1"-1 1/2"	0.937					
	1 1/2"-2"						
		a II					
511611515		1"					
BUS LINE	0"-1/2"	2.33 ³					
		1"	2"	C"	42"		
DECV	1/0" 1/2"		3"	6"	12"		
DECK STAIRS	1/8"-1/2" 1/2"-1"	0.446					
SIAIKS	1/2 -1						

Notes:

-- Sample collected but not analyzed

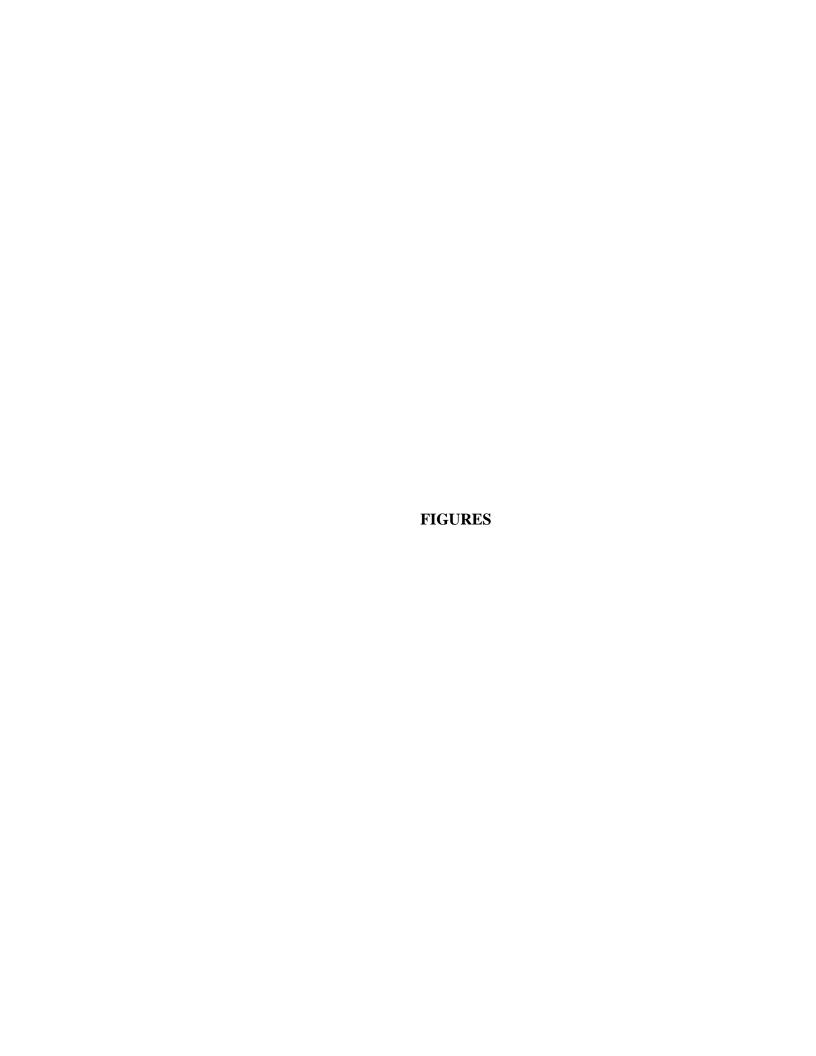
ND PCBs not detected above laboratory method detection limits. Refer to lab reports for individual Aroclor detection limits.

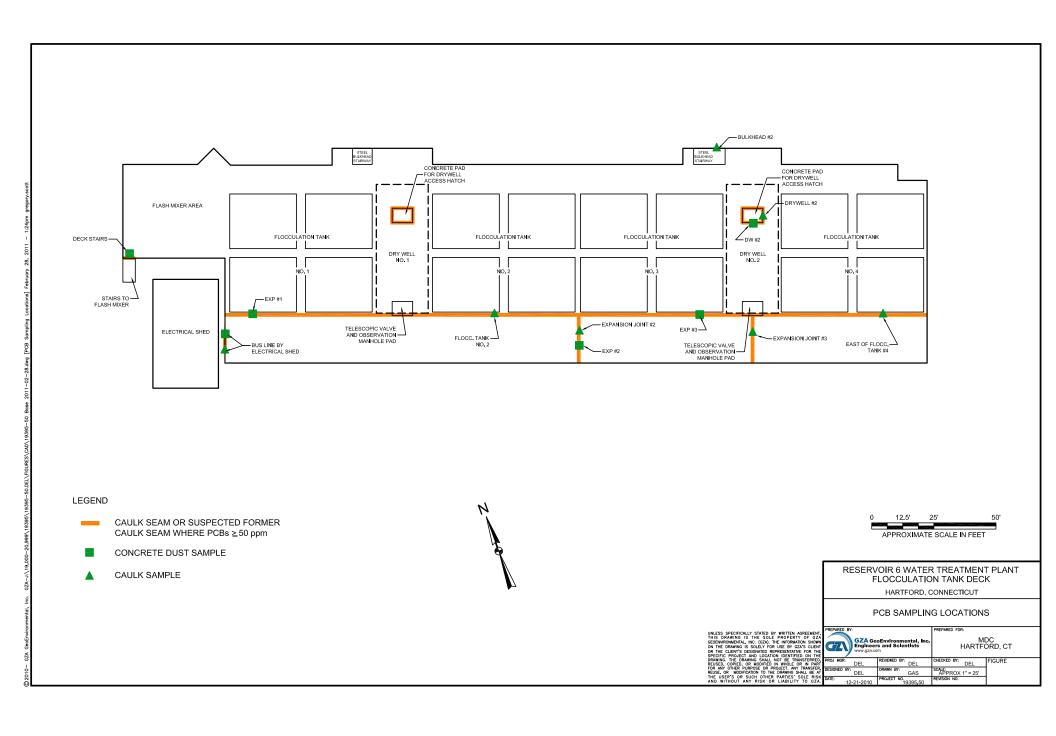
- See Abatement Plan page 4 for sampling description.
- Duplicate sample "Duplicate A" indicated 8.93 mg/kg total PCBs
- Duplicate sample "Duplicate B" indicated 0.605 mg/kg total PCBs

Table 3

Data Quality Criteria and Measurement Frequency MDC Reservoir No. 6 - Flocculation Tank Deck West Hartford, Connecticut

DATA QUALITY INDICATOR	PERFORMANCE CRITERIA	SAMPLE OR ACTIVITY USED TO ASSESS PERFORMANCE	FREQUENCY
Precision-overall	±45%	Field duplicates	Minimum: One per group or 10% of samples
Precision-laboratory	±45%	 Matrix spike Matrix spike duplicates 	One per 20 samples
Accuracy/bias	Percent recovery limits 40-140%	 Matrix spike Matrix spike duplicates 	One per 20 samples
Accuracy/bias	Percent recovery limits 40-140%	Laboratory control samples	One per analytical batch
Accuracy/bias- contamination	No target analytes above laboratory quantification limit	Field or Equipment blanks Method blanks	Minimum: One per group or 10% of samples One per analytical batch
Comparability	Not applicable	Comparability check	
Data Completeness	90% Overall	Data completeness check	
Sensitivity	Low standard at or below Reporting limit	Low calibration standard	Sample analysis Cannot proceed with- Out a valid initial calibration
Accuracy	Percent recovery limits 30-150%	Surrogates	In every QC and field sample





APPENDIX A

LIMITATIONS

- 1. This Work Plan for the Abatement of PCB materials was prepared by GZA GeoEnvironmental, Inc. (GZA) in accordance with generally accepted practices of other consultants undertaking efforts at the same time and in the same geographical area, and GZA observed the degree of care and skill generally exercised by other consultants under similar circumstances and conditions. GZA's Work Plan is based on our professional opinion as to how the work should be performed supported by the limited data gathered during the course of the various evaluations of the Site performed by GZA and other consultants. No other warranty, express or implied, is made. Specifically, GZA does not and cannot represent that the Site contains no PCBs hazardous materials, or other latent condition beyond that reported present by GZA and others during the performance of various evaluation of the Sites
- 2. This Work Plan is not to be used as a bid document for conducting PCB abatement. GZA recommends that in addition to this Work Plan that Plans and Specification for the work be prepared and a bid walkthrough be administered by personnel familiar with the on-Site conditions.
- 3. The observations presented in this Work Plan were made under the conditions stated herein. This Work Plan was prepared based solely upon the services described therein, and not on scientific tasks or procedures beyond the proposed Scope of Services.
- 4. Where sample collection was conducted by others, GZA has relied on the validity and representativeness of the collected sample, and has not conducted an independent evaluation of the reliability of the samples or the resulting data.
- 4. Where sample analyses were conducted by an outside laboratory, GZA has relied upon the data provided, and has not conducted an independent evaluation of the reliability of these data.

APPENDIX B

PHOTOGRAPHS



Photo 1 - Flocculation Tank Deck looking approximately west. Expansion joint is on right side, in front of railing. Flocculation basins are enclosed by railings.



Photo 2 - Stairs to Flash Mixer.



Photo 3 – Concrete Pad for drywell access hatch.



Photo 4 – Telescopic valve and observation manhole pad. (Main expansion joint runs along facing side)



Photo 5 - Bus line by electrical shed.



Photo 6 - Main expansion joint (typical).



Photo 7 - Main expansion joint. Note proximity to (empty) basin.



Photo 8 - Main expansion joint.

APPENDIX C

TIGHE & BOND'S 2009 TECHNICAL MEMORANDUM

Flocculation Tank Deck Repairs - Reservoir No. 6 WTP

To:

Scott B. Nell, P.E. - Principal Engineer

FROM:

John R. Frawley, P.E.

COPY:

Peter J. Grabowski, P.E.

DATE:

August 5, 2009

In accordance with our proposal dated March 24, 2009, Tighe & Bond has completed its visual inspection of the top of the settling compartment roof slab at the Reservoir No. 6 Water Treatment Plant (R6WTP). The inspection included the expansion joint between the settling compartment roof slab and the flocculation basin as well as the stairs leading to the flash mix tanks. Representatives from Tighe & Bond and Frawley Engineering conducted the inspection on May 13, 2009. The purpose of the site visit was to record areas of structural deficiencies and to quantify the extent of the deteriorated concrete that we observed. Our inspection did not include the interior of the basins or the underside of the settling compartment roof slab. In addition to the structural inspection, a hazardous materials survey was performed by Tighe & Bond on June 11, 2009 and July 2, 2009 since demolition activity may impact expansion joint material and caulking.

1. Background

The settling compartment reinforced concrete roof slab is a two-way slab supported by longitudinal and transverse reinforced concrete beams of various depths. The roof slab is located along the south side of the flocculation basin and is approximately 8" thick, 247' long and 15'-6" wide (See photo 1). A 1" wide expansion joint runs the length of the flocculation basin. The expansion joint is located between the south wall of the flocculation basin and the north side of the settling compartment roof slab (See photo 2). The reinforced concrete stairs that provide access to the flash mix tanks are located on the south side of the mix tanks and to the west of the flocculation basin (See photo 3).

Drawings titled "Reservoir 6 Water Treatment Plant Stage II" dated November 1968 were used as a reference.

2. Inspection Observations

2.1 Settling Compartment Roof Slab

We observed many cracks in the roof slab over the settling compartments. The cracks generally run in a north / south direction, parallel with the short direction of the slab (See photo 4). The majority of the cracks are less than a 1/16 of an inch in width. However, a few of the cracks are wider and are approaching 1/8 of an inch in width (See photo 5). One of the cracks in the slab extends through the spandrel beam that runs along the northerly edge of the roof slab at the expansion joint.

The cracks appear to be shrinkage cracks as opposed to structural cracks, which are cracks caused by excessive loading. The shrinkage cracks are due to an insufficient number of control joints in the slab. We only observed 3 control joints in the 247' long slab. We measured the lengths of all the cracks observed on the roof slab and plotted their

Technical Memorandum Tighe&Bond

approximate location on a drawing showing the flocculation basin and settling basin roof slab (Refer to sheet 1). The total length of all the cracks measured is approximately 650 linear feet.

2.2 Expansion Joint

The horizontal expansion joint between the settling compartment roof slab and the flocculation basin compartments exhibits several areas of extensive deterioration (See photo 6). The edges of the concrete along the expansion joint are spalled at several locations, and the aggregate is exposed (See photo 7). In addition, we observed weeds and moss growing from the expansion joint in other locations (See photo 8). The concrete sluice gate curbing adjacent to the expansion joint is also deteriorated at several locations (See photo 9) The caulking used to seal the expansion joint has failed and is not watertight (See photo 10) We observed an exposed PVC plastic waterstop within the expansion joint at several locations (See photo 11). Sections a-a and c-c on sheet 526.3-36 of the original drawings shows the waterstop spanning across the expansion joint. The waterstop is shown to have been cast in the concrete member on each side of the expansion joint In the locations where we could observe the waterstop, it appears that there was very little concrete cover, causing the concrete to spall. In other locations, however, it appears that only one side of the waterstop is cast into the concrete. The free side of the waterstop is curled upward and not horizontal or spanning across the expansion joint as shown in the original details. In addition, at some locations the waterstop appears to be missing completely.

2.3 Flash Mixer Concrete Stairs

The concrete stairs leading up to the flash mixer tank have settled approximately 3 inches (See photo 12). In addition, we observed a crack in the retaining wall below the sidewalk on the west end of the flash mixer basin adjacent to the concrete stair (See photo 13). The 1 –2 inch wide crack appears to be a cold joint. The area below the crack appears to have been filled in with masonry and then a skim coat of mortar applied over the surface of the masonry. Examining the crack, we observed that the backfill below the sidewalk above has also settled (See photo 14).

2.4 Hazardous Material Testing

Tighe & Bond conducted a hazardous materials survey in the areas where repairs are proposed. We collected representative samples of the existing caulking along the expansion joint and at the top of the stairs for the flash mixer. The caulking was tested for asbestos and polychlorinated biphenyls (PCBs). The test results for the caulking came back negative for asbestos (See Table 1, Appendix A). The test results for PCBs came back positive (See Table 2, Appendix A).

As a matter of background, PCBs contained in building materials in a non-liquid "cured" form at concentrations greater than 50 milligrams per kilogram (mg/kg), which is equivalent to parts per million (ppm), is regulated by the Toxic Substances Control Act (TSCA). These building materials classified are as PCB Bulk Product Wastes administered/enforced by the Environmental Protection Agency (EPA). TSCA-regulated PCB materials, including all materials that become impacted from PCBs as a result of the regulated PCB material, are also subject to TSCA. The TSCA regulatory threshold for caulking is 50 ppm. The caulking collected and tested from the flocculation basin and flash mixer stairs contained 1,550 ppm of PCBs. Once the caulking tested positive for PCBs, we were required to test the concrete in contact with the caulking for PCBs. We tested the

TECHNICAL MEMORANDUM

concrete by drilling holes along the expansion joint and at the top of the stairs for the flash mixer, and subsequently collected the concrete dust for testing. In addition, we also collected several concrete samples at 3 inches and 6 inches away from the caulked joints. Initially, we only tested the concrete samples collected along the expansion joint and at the top of the stairs for the flash mixer. The test results came back positive for PCBs in the concrete, indicating that PCBs leached from the caulking into the concrete. TSCA regulatory threshold for concrete is 1 ppm. The PCB concentrations in the concrete samples C-1, C-2, and C-3 ranged from 19.13 ppm to 4.16 ppm, respectively (See Table 3, Appendix A). Subsequent testing on the samples collected at 3 inches and 6 inches away from the expansion joint and the stairs for the flash mixer also tested positive for PCBs (See Table 3, Appendix A). Samples C-1A, C-2A, and C-3A were collected 3 inches away from the caulked joint. Samples C-1B, C-2B, and C-3B were collected 6 inches away from the caulked joint. Currently, we have not yet delineated the lateral extent of PCB impacts in the concrete to locations less than 1 mg/kg.

3. Repair Alternatives

3.1 Hazardous Materials Remediation

The PCB contamination issue will need to be addressed regardless of the selected repair alternative. TSCA regulations can be very burdensome in dealing with different scenarios related to PCB cleanup. In general, the three approaches to deal with the PCB caulking and contaminated concrete are as follows:

3.1.1 Performance Based Cleanup

A performance based cleanup will require all caulking to be removed and properly disposed. Also, all impacted concrete at concentrations greater than 1 mg/kg will need to be removed and properly disposed. This approach will require intensive verification sampling and testing to demonstrate that concrete has been remediated. In this scenario, no EPA reporting or notification is required.

3.1.2 Self-Implementing Cleanup Plans (SIP)

A self-implementing cleanup plan (SIP) will require that plans be submitted to EPA for review and approval. A SIP is usually used to address larger PCB cleanup sites. However, SIPs cannot be used to cleanup PCBs associated with any private or public drinking water source or distribution system. In this case, it would seem that a SIP cleanup plan could not be used for this project.

3.1.3 Risk-Based Cleanup

A risk-based cleanup plan would be required if it was proposed to leave certain PCB concentrations in the environment above established TSCA regulatory thresholds (e.g., PCBs in concrete above 1 mg/kg). If it is not practical or possible to remove the impacted concrete, a risk-based cleanup plan is recommended. A risk based cleanup approach will require the District to submit a plan to the EPA for review and approval. The plan would outline measures to encapsulate the PCBs using proven methods (typically an epoxy-type coating) and then establish a periodic sampling plan to demonstrate no risk to human health. The sampling plan would have to occur indefinitely until the residual PCBs were removed entirely.

3.2 Settling Compartment Roof Slab

The settling compartment roof slab will continue to deteriorate as long as moisture is allowed to penetrate into the cracks, causing corrosion of the reinforcing steel and leading to enlargement of the cracks due to the freeze thaw cycle. Several options are available to repair the top surface of the roof slab and minimize moisture intrusion into the slab. The alternatives we considered include injecting epoxy resin into the cracks; the application of an epoxy overlay system to the surface of the slab; the application of a cement-based, flexible waterproofing system with an acrylic top coat to the surface of the slab; or a combination of repair alternatives.

3.2.1 Crack Injection Using Epoxy Resin

A low viscosity, expanding, polyurethane chemical grout can be injected into the cracks to prevent water infiltration by forming a flexible gasket or plug within the joint or crack in concrete. The Sika Corporation manufactures a product called SikaFix HH LV, which is ANSI/NSF 61 approved for potable water contact. This would allow the cracks to be injected while the flocculation basin and settling basins are operational. Epoxy resin injection is a very effective method of sealing cracks. However, it is not aesthetically pleasing once the injection is completed. The epoxy resin, visible on the surface of the slab, will make all the cracks in the slab standout. In addition, epoxy crack injection is relatively expensive, ranging between \$75 and \$100 dollars per linear foot. **Refer to Appendix B for product literature**.

3.2.2 Epoxy Overlay System

A second alternative for repairs to the slab is a composite overlay system consisting of aggregate and an epoxy resin adhesive binder that is spread over the top surface of the entire settling basin roof slab. The overlay will form a hard durable surface that will protect the concrete surface from water infiltration and freeze thaw cycle attack, both of which can lead to additional scaling, cracking, rebar corrosion, and spalling of the concrete surface. The Sika Corporation manufactures an overlay system called Sikadur Epoxy Broadcast Overlay System. This system is not ANSI/NSF 61 approved for potable water contact. However, since the overlay system is not in direct contact with the potable water, the overlay system could be installed provided that individual compartments of the flocculation basin and settling basin can be taken off line while the overlay material is installed. Installation of the epoxy overlay will require that the existing concrete slab surface is prepared in accordance with International Concrete Repair Institute (ICRI) standards to a concrete surface profile (CSP) of 3. A CSP of 3 is equivalent to a concrete surface that has received a light shot blast. The typical cost for the installation of the Sikadur Epoxy Broadcast Overlay System, including surface preparation, is between \$5 and \$7 per square foot. Refer to Appendix B for product literature.

3.2.3 Cement-Based Flexible Waterproofing System

A third alternative for repairs to the slab is a flexible polymerized cementitious overlay system consisting of a polymer modified cement base course, fiberglass mesh, and an acrylic top coat. The coating system is applied to the top surface of the entire settling basin roof slab. This type of coating system is flexible, breathable, and waterproof and has extraordinary adhesion coupled with an ability to withstand prolonged pedestrian traffic. The coating will provide a system that will protect the concrete surface from water infiltration and freeze thaw cycle attack, both of which can lead to additional scaling, cracking, rebar corrosion, and spalling of the concrete surface. The Sika Corporation manufactures a cement-based flexible waterproofing deck coating system called Sikagard

FlexCoat ATC. This system is not ANSI/NSF 61 approved for potable water contact. However, since the coating system is not in direct contact with the potable water, the coating system could be installed provided that individual compartments of the flocculation basin and settling basin can be taken off line while the deck coating is installed. Installation of the deck coating system will require that the existing concrete slab surface is prepared in accordance with ICRI standards to a CSP of 3. The typical cost for the installation of the Sikagard FlexCoat ATC system, including surface preparation, is between \$4 and \$6 per square foot. Refer to Appendix B for product literature.

3.3 Expansion Joint Repairs

The repair of the expansion joint between the settling compartment roof slab and the flocculation basin will consist of two distinct operations. The first operation will involve the repair of the deteriorated and spalled concrete along the length of the expansion joint. The second operation will be the actual sealing of the expansion joint. The expansion joint will be sealed with a flexible material that will allow the joint to move, while at the same time prevent water and debris from intruding into the joint. The concrete repairs will be done using a polymer-modified cementitous mortar. We considered two alternatives for sealing the expansion joint. A conventional caulked joint and a Hypalon sealing strip.

3.3.1 Concrete Repair along the Expansion Joint

The deteriorated edges of the concrete and the spalled concrete surfaces along the edges of the expansion joint will be repaired with polymer-modified mortar regardless of which sealing method is used. Polymer-modified mortars have increased freeze/thaw durability and bonding characteristics and have higher compressive and flexural strengths than conventional concrete. The Sika Corporation manufactures a product called SikaTop 122 Plus or 123 Plus which are two component, polymer-modified, cementitious, non-sag repair mortars. The mortars contain FerroGard 901, a penetrating corrosion inhibitor. The repair mortars are ANSI/NSF 61 approved for potable water contact. All deteriorated concrete will need to be removed along the length of the expansion joint. Surface preparation work will include high pressure water blast, scabbler or other mechanical means to obtain an exposed aggregate surface free of deleterious materials. The typical repair costs using SikaTop 122 Plus or SikaTop 123 Plus, including surface preparation, is between \$65 and \$75 per square foot. Refer to Appendix B for product literature.

3.3.2 Expansion Joint Seal - Conventional Sealant and Backer Rod

The first alternative considered for sealing the expansion joint is the use of a conventional polyurethane elastomeric sealant with a closed cell backer rod. If installed properly, polyurethane elastomeric sealants provide a highly elastic joint seal that has exceptional cut and tear resistance and that has excellent resistance to aging and weathering. Proper design of the expansion joint width to depth ratio and surface preparation of the edges of the concrete are keys to the performance of the joint sealant. However, it should be noted that all joint sealants will require some type of periodic maintenance and eventually will need to be replaced. Sikaflex – 1a is a one part polyurethane, elastomeric sealant that is designed for installation in movement joints. Sikaflex – 1a is ANSI/NSF 61 approved for potable water contact. The typical installation cost for Sikaflex – 1a, including surface preparation, is between \$8 and \$10 per linear foot. Refer to Appendix B for product literature.

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3.3.3 Expansion Joint Seal – Hypalon Sealing Strip

The second alternative considered for sealing the expansion joint is to use an epoxy adhesive and a combiflex Hypalon sealing strip. This type of joint seal is typically used for sealing irregular and difficult joints. Hypalon is the trademark name for chlorosulfonated polyethylene (CSPE) synthetic rubber (CSM) and is noted for its resistance to chemicals, temperature extremes, and ultraviolet light. Joints sealed using Hypalon systems are capable of withstanding extreme movements and chemical exposures while maintaining a watertight seal. Essentially, the expansion joint is sealed by placing a rubber strip across the joint. The rubber strip is sized to allow for movement of the expansion joint. The rubber strip is fastened to the concrete on each side of the joint using an epoxy adhesive. It should be noted that this product is not an aesthetic product. Sikadur Combiflex is a system that consists of Sikadur 31 Hi-Mod Gel, epoxy adhesive, and the Combiflex Hypalon sealing strip. This system will still require periodic maintenance and will require some type of cover plate at the walkways to prevent damage from foot traffic. In addition, care will need to be taken during snow removal to prevent the Hypalon seal strip from being damaged by shovels. The system is approved by the Underwriters Laboratories (UL) for potable water contact. The typical installation cost for the Sikadur Combiflex System, including surface preparation, is between \$35 and \$40 per linear foot. Refer to Appendix B for product literature.

3.4 Flash Mixer Concrete Stairs

The stair leading to the Flash Mixer Tank and the adjacent in-filled concrete/masonry wall need to be demolished and replaced. A new reinforced concrete stair can be constructed on a proper foundation and compacted subgrade. The new stair will eliminate the 3-inch elevation difference between the top of the stair and adjacent concrete walk. Also, a new reinforced concrete wall can be constructed to repair the section of retaining wall adjacent to the stair with the large crack or cold joint. In addition, during the construction of the new stair and section of wall, flowable fill or fill concrete can be used to eliminate the subgrade settlement that currently exists below the section of sidewalk located at the top of the stair. Also, to allow for construction of the new stair, the chain link fencing and aluminum guardrail will be removed in the vicinity of the stair. New fencing and Aluminum guard rail will be installed in the vicinity of the new stair. The cost of the concrete work required to replace the stair, and repair the wall, including formwork and reinforcing steel, is approximately \$1,000 per cubic yard.

4. Recommendations

4.1 Hazardous Material Remediation

We recommend a Risk Based Cleanup approach. The goals of the project are to repair the deteriorated concrete, replace the caulking along the expansion joint between the flocculation basin and settling basin, and to remove and replace the concrete stairs to the flash mixer. It is not practical or possible to remove all of the concrete contaminated with PCBs. A risk-based cleanup plan outlining measures to encapsulate the PCBs using proven methods (typically an epoxy-type coating) needs to be developed and submitted to the EPA for review and approval. The plan needs to establish a schedule for periodic sampling and demonstrate no risk to human health.

4.2 Settling Compartment Roof Slab

We recommend that a combination of repair options be used on the roof slab. The crack injection alternative is cost prohibitive to inject all 650 linear feet. However, if only the larger cracks are injected with the Sikafix HH LV epoxy resin and then the slab is overlaid with either the Sikadur Epoxy Broadcast Overlay System, or the Sikagard Flexcoat ATC coating, then the cost becomes more affordable. We identified approximately 60 linear feet of cracks that are the larger variety that should be injected with resin. Neither the composite overlay system nor the flexcoat system is ANSI/NSF 61 approved for potable water contact. However, since the coating systems will not be in direct contact with the potable water, the overlay system could be installed provided that individual compartments of the flocculation basin and settling basin can be taken off line while the overlay material is installed. Our first choice would be to use the Sikadur Epoxy Broadcast Overlay System. The epoxy overlay system will provide a heavier duty coating. However, if moisture content and vapor transmission in the existing concrete roof slab becomes an issue with the adhesion of the epoxy coating, then the cement-based flexible waterproof coating system will be the better choice. Both coating systems are comparable in cost. Therefore, a final decision on the deck coating can be made during the design phase. We recommend that a moisture test be conducted during the design phase before selection of the final deck coating system is made.

4.3 Expansion Joint Repairs

We recommend that the concrete repairs along the expansion joint be made using the specified polymer modified repair mortar. To seal the expansion joint, we recommend that a conventional polyurethane elastomeric sealant with a closed cell backer rod be used. It is our opinion that if installed properly, the polyurethane elastomeric sealant will provide a highly elastic joint seal that will have excellent resistance to aging and weathering. We believe that both alternatives for sealing the expansion joint would be equally susceptible to damage during snow removal. In addition, the Hypalon seal would require cover plates at the walkways to protect the sealant from foot traffic. The cover plates could be a tripping hazard. Since both joint sealants will require some type of periodic maintenance, and even though the polyurethane sealant will eventually need to be replaced, we do not feel that the extra costs associated with the Hypalon seal provide added value for this application.

4.4 Flash Mixer Concrete Stairs

We recommend that the stair leading to the Flash Mixer Tank and the adjacent in-filled concrete/masonry wall be demolished, new reinforced concrete stairs constructed, and repairs to the concrete wall be made.

4.5 Opinion of Probable Construction Costs

Class 3 level construction cost estimates, as defined by the Association for the Advancement of Cost Engineering (AACE) International Recommended Practices and Standards, were used in this preliminary design report. According to AACE International Recommended Practices and Standards, the estimate class designations are labeled Class 1, 2, 3, 4, and 5, where a Class 5 estimate is based upon the lowest level of project definition and a Class 1 estimate is closest to full project definition and maturity. The end usage for a Class 3 estimate is conceptual studies and feasibility. The expected accuracy range of a Class 3 estimate is between +30% to -20%. The level of project definition for a Class 3 estimate is between 10% and 40%.

We reviewed several repair options for the settling compartment roof slab, the expansion joint between the settling compartment roof slab and the flocculation basin, and the stairs leading to the flash mix tanks. All of the options that we evaluated include a risk based hazardous materials cleanup, removal and repair of all deteriorated concrete along the expansion joint with polymer modified concrete, and the removal and replacement of the concrete stairs leading to the flash mixer tank. The differences between the options that we evaluated are outlined below:

- Option 1: Epoxy injection of 100% of the cracks in the settling compartment roof slab Installation of a Hypalon sealing strip along the expansion joint
- Option 2: Epoxy injection of 100% of the cracks in the settling compartment roof slab Installation of Polyurethane elastomeric sealant along the expansion joint
- Option 3: Epoxy injection of only the large cracks in the settling compartment roof slab Epoxy overlay system over the entire settling compartment roof slab Installation of a Hypalon sealing strip along the expansion joint
- Option 4: Epoxy injection of only the large cracks in the settling compartment roof slab Epoxy overlay system over the entire settling compartment roof slab Installation of Polyurethane elastomeric sealant along the expansion joint
- Option 5: Epoxy injection of only the large cracks in the settling compartment roof slab Cementitious overlay system over the entire settling compartment roof slab Installation of a Hypalon sealing strip along the expansion joint
- Option 6: Epoxy injection of only the large cracks in the settling compartment roof slab Cementitious overlay system over the entire settling compartment roof slab Installation of Polyurethane elastomeric sealant along the expansion joint

The estimated opinion of probable construction cost for each option is shown in **Table 4-1**. Detailed cost estimate breakouts are provided in **Appendix C.** A 30% contingency allowance is included in the construction cost estimate to account for undefined or miscellaneous items that are not included in the preliminary design.

Table 4-1		
Opinion of Probable Construction Cost Summary		
Flocculation Tank Deck Repairs	1	
Option 1	\$	166,000
Option 2	\$	149,000
Option 3	\$	113,000
Option 4	\$	103,000
Option 5	\$	102,000
Option 6	\$	92,000

We recommend that Option 4 be selected at a construction cost of approximately \$103,000. Option 4 includes full removal and replacement of the reinforced concrete stair to the flash mixer, including replacement of the associated aluminum guard rail and chain link fence. In addition, Option 4, includes the epoxy injection of approximately 60 linear feet of cracks in the settling compartment roof slab and the application of an epoxy overlay system to the settling compartment roof slab. The option also includes refurbishing the deteriorated concrete along the expansion joint using polymer modified concrete and the installation of elastomeric sealant along the length of the expansion joint. The option includes the removal and proper disposal of contaminated deteriorated materials (i.e., caulking and

concrete debris) within the work area. In addition, the encapsulation of a 12" wide strip of PCB contaminated concrete along the expansion joint is also included in the recommended option.

The costs associated with additional sampling, testing, and possible remediation of existing construction materials within the basin or throughout the treatment facility, that may be required by the EPA as part of the risk based cleanup approach, have not been included in this opinion of probable construction cost.

J:\M\M0350\45 - Flocculation Tank Deck Repairs\Repair Tech Memo doc

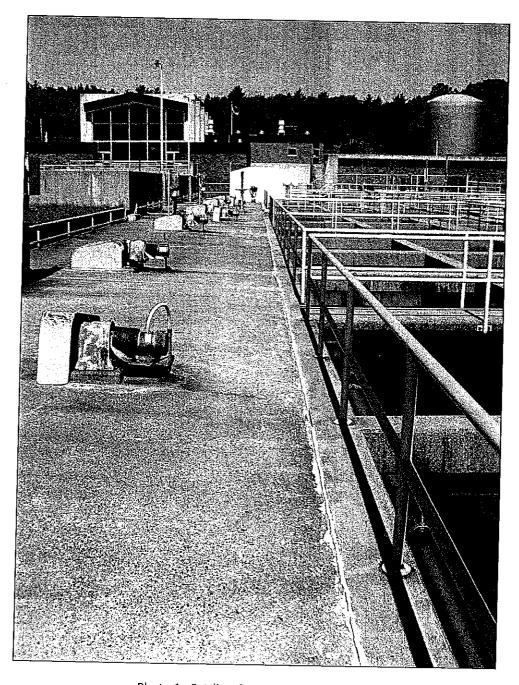


Photo 1 - Settling Compartment Roof Slab



Photo 2 – 1 Inch Wide Expansion Joint At The Settlement Compartment & Flocculation basin

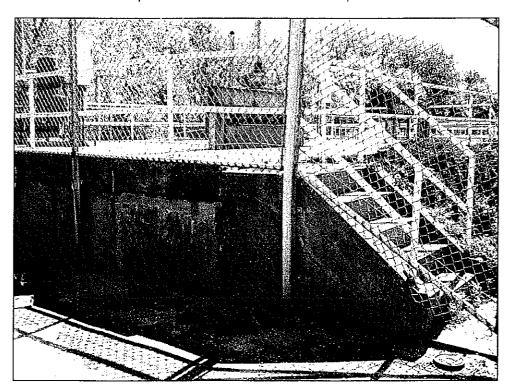


Photo 3 – Reinforced Concrete Stairs At The Flash Mix Tank

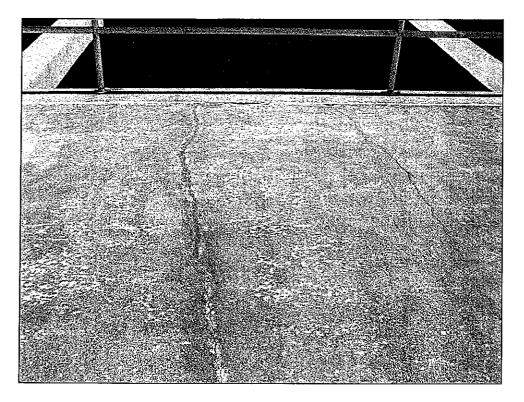


Photo 4 – Cracks In The Settling Compartment Roof Slab

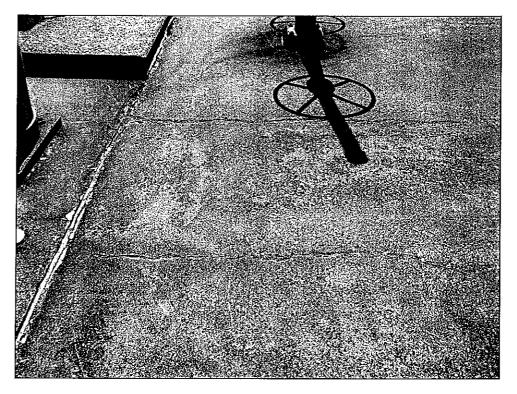


Photo 5 – Wider Cracks In Settling Compartment Roof Slab

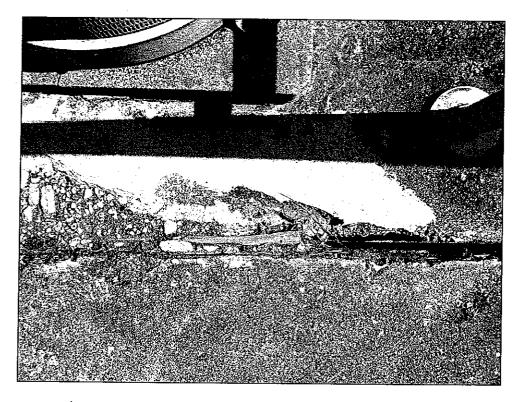


Photo 6-Extensive Concrete Deterioration Along The Expansion Joint

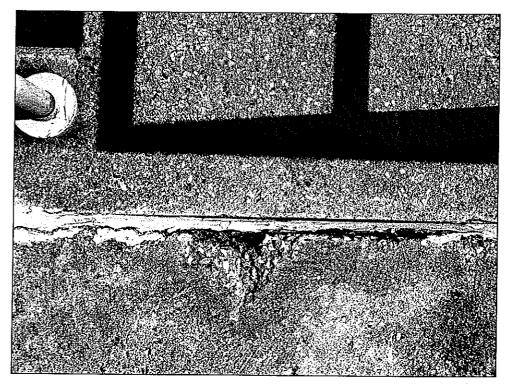


Photo 7 – Exposed Aggregate At Spalled Concrete Along Expansion Joint

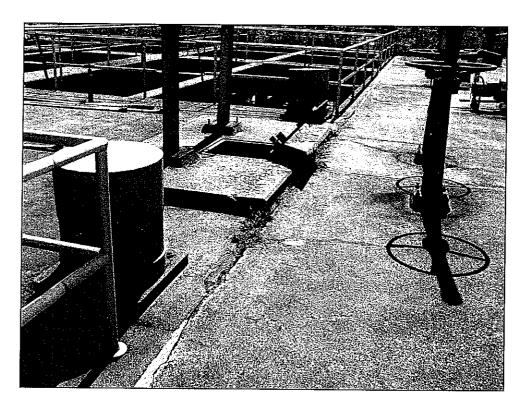


Photo 8 – Weeds growing From The Expansion Joint



Photo 9 – Deterioration Of Concrete Curbing Along The Expansion Joint

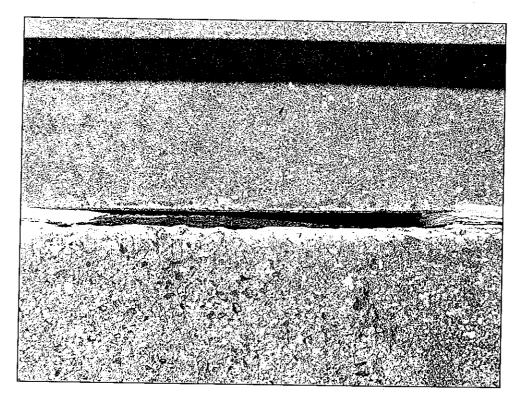


Photo 10 -- Failed Caulk Within The Expansion Joint

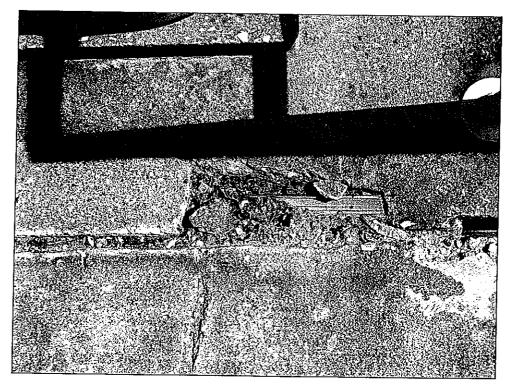


Photo 11 – Waterstop Within The Expansion Joint

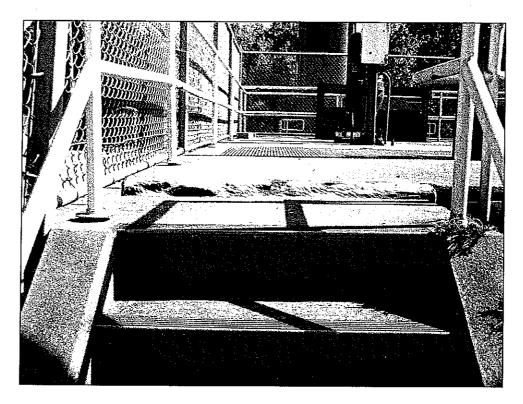


Photo 12-3 Inch Settlement Of The Concrete Stairs At The Flash Mixer Tank

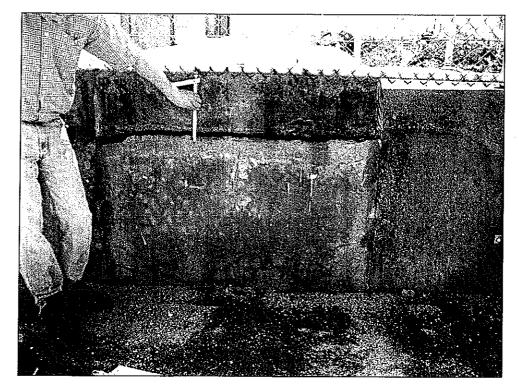


Photo 13 – Large Crack In Retaining Wall Adjacent To The Flash Mixer Stairs

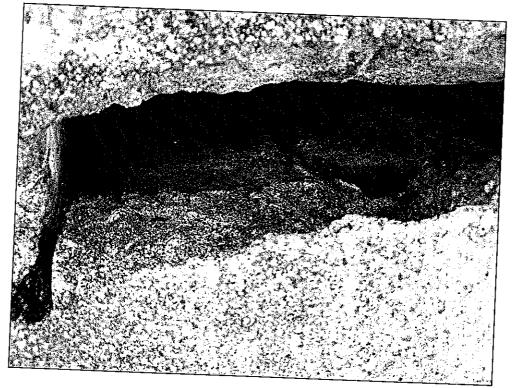
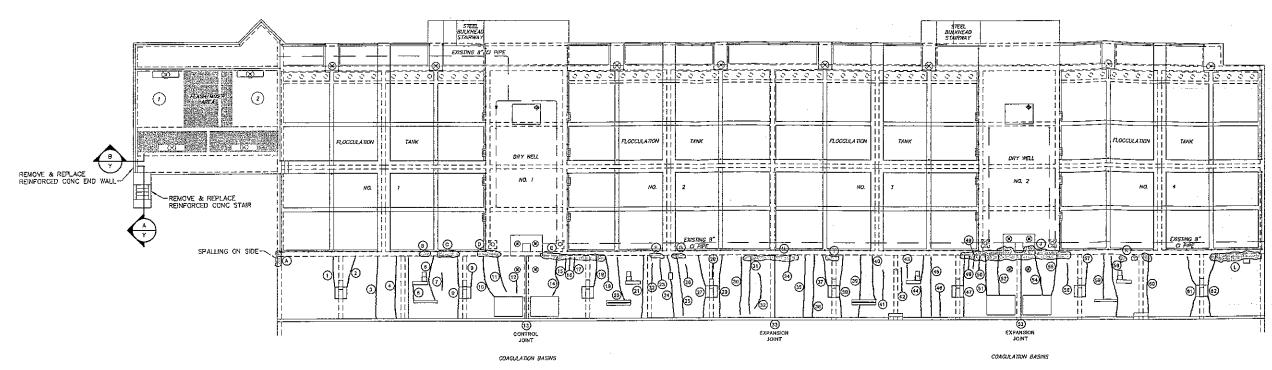
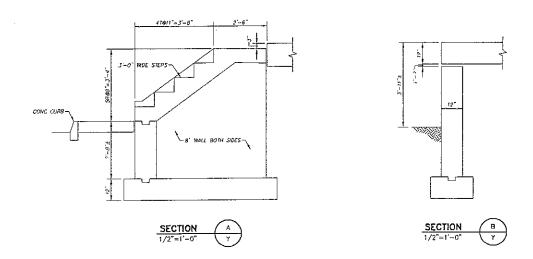


Photo 14 – Close-up Picture Of Crack In Retaining Wall Shown in Photo 13





The Metropolitan District
Hartford, Connecticut

UNDERGROUND U	TUTY CHE	CK	REVISION	UAIL	DRAFTER RWK CHECKED JF	T
APPROXIMATE LOCATION	SOURCE	DATE				•
GAS					PROJ. ENG. JF PEER REVIEW PJG	
ELEC.		<u> </u>			SUBMITTED	
SEWER					APPROVED	
FIBER OPTICS					DATE 6/09 MDC CODE:	

Tighe&Bond
Consulting Engineers

RESERVOIR 6 WATER TREATMENT PLANT FLOCCULATION TANK DECK REPAIRS LOCATION PLAN PLAN NUMBER S-12009-#

TABLE 1Asbestos-Containing Materials InventoryReservoir No. 6 - Water Treatment Facility, West Hartford, Connecticut

	Comment	Material located within expansion joints.	Material located around perimeter of concrete access hatchways.	Material located at intersection of stairs and concrete deck.
11.000	ACSUIL	Negative	Negative	Negative
Approximate Otv	יברי כאוווותר לנאי	1	1	ı
Location		riocculation basin: Throughout main deck	Flocculation Basin: Dry well hatchways	Flocculation Basin: Stairs to flash mixer
Material	Cariffing material	כממוצייות וומכנו ומו	Caulking material	Caulking material
Sample #	A-01 A-02 A-03 Caulking matorial		A-04, A-05, A-06 Caulking material	A-07

LEGEND;

 $\mathsf{LF} = \mathsf{Linear}$ foot. Bold and shaded areas indicate a positive result.

TABLE 2

Caulking Analytical Results

The Metropolitan District

Reservoir No. 6 - Water Treatment Facility, West Hartford, Connecticut

Reported in mg/kg unless otherwise noted

מלאסו בכם זון וואל אל מוויכשם סכווכן אושפ ווסנכם		
Sample Identification	CAULK-1	
Date Collected	6/11/2009	TSCA Regulatory
Sample Location	Flocculation Tank Deck - Main Expansion Joint	spione
Polychlorinated Biphenyls (PCBs)*		
Arocior 1016	<50	N
Aroclor 1221	<50	N
Aroclor 1232	<50	N.
Aroclor 1242	<50	NE
Aroclor 1248	<50	NE
Arodor 1254	637	ШN
Aroclor 1260	913	NE
Aroclor 1262	<50	NE
Arodor 1268	<50	ШN
Total PCBs	1,550	20
10010		

mg/kg indicates milligrams per kilogram

<xx indicates compound was not detected. Detection limit is provided.

NE indicates not established

Outlining indicates reported concentration is at or above one or more regulatory standards. TSCA indicates the US EPA Toxic Substances Control Act.

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Concrete Analytical Results

Reservoir No. 6 - Water Treatment Facility, West Harfford, Connecticut The Metropolitan District

Reported in mg/kg unless otherwise noted

Sample Identification	-	C-2	C-3	C-1A	C-2A	C-3A	C-1B	C-2B	C-3B	
Date Collected	7/2/2009	7/2/2009	7/2/2009	7/2/2009	7/2/2009	7/2/2009	7/2/2009	7/2/2009	7/2/2009	
Sample Location	Flocculation Tank Deck - Main Expansion Joint, North Section	Flocculation Tank Deck - Main Expansion Joint, South Section	Stairs to Flash Mixer	Flocculation Tank Deck - 3" Away From Main Expansion Joint, North Section	Fiocculation Tank Deck - 3" Away From Main Expansion Joint, South Section	3" Awav From Stairs to Flash Mixer	Flocculation Tank Deck - 6" Awav From Main Expansion Joint, North Section	Flocculation Tank Deck - 6" Away From Main Expansion Joint, South Section	6" Away From Stairs to Flash Mixer	TSCA Regulatory Thresholds
						Ė				
Polyculoimated Diplicativis (PCDS)	, , ,	00 830	6,4	, ,	200	7	800	97	, ,	<u>u</u>
Alociol Tuto	25.13	70:02	0.00	120:07	130.02	0.00	0.020	00000	200	¥
Araciar 1221	<2.15	<0.532	<0.510	<0.521	<0.521	<0.510	<0.526	<0.536	<0.510	N.
Aroclor 1232	<2.15	<0.532	<0.510	<0.521	<0.521	<0.510	<0.526	<0.536	<0.510	<u>ш</u>
Arodor 1242	<2.15	<0.532	<0.510	<0.521	<0.521	<0.510	<0.526	<0.536	<0.510	띨
Arocior 1248	<2.15	<0.532	<0.510	<0.521	<0.521	<0.510	<0,526	<0,536	<0.510	A M
Aroclor 1254	10.30	1.72	2.44	<0.521	<0.521	3,68	669'0	0.734	1.21	Щ
Araclor 1260	8,83	3.88	1.72	0.766	<0.521	3.22	0.695	1.120	1,25	띨
Aroclor 1262	<2.15	<0.532	<0.510	<0.521	<0.521	<0.510	<0.526	<0.536	<0.510	Ë
Arociar 1268	<2.15	<0.532	<0.510	<0.521	<0.521	<0,510	<0.526	<0.536	<0.510	뮐
Total PCBs	19.13	5.60	4.16	0.766	<0.521	6.90	1.394	1.854	2.46	-
Notes:										

mg/kg indicates milligrams per kilogram

<xx indicates compound was not detected. Detection limit is provided.</p>
NE indicates not established
Outlining indicates reported concentration is at or above one or more regulatory standards.
TSCA indicates the US EPA Toxic Substances Control Act.

Low viscosity, expanding, polyurethane chemical grout

Description	SikaFix HH LV is a hydr designed to form a flexible	ophobic polyurethane that ve	when used alone or with SikaFix LV accelerator is racks in concrete from water infiltration.			
Where to Use	■ Sealing leaks through of					
	■ Defective concrete (cra					
	■ Limestone (tunnels da	ms)				
	■ Pipe intrusions	•				
	Wastewater tanks					
	 Sewers, manholes, utili 	ty boxes, etc.				
Advantages	 Hydrophobic, only a sm 	all amount of water is neede	ed for reaction			
	Expands 2-5 times in vi	plume depending upon the a	mount of SikaFix HH LV accelerator is used			
		jection into narrow hair line				
		eates tight seal in moving cra	icks			
	■ Tenacious adhesion to wet and dry surfaces ■ Contains no volatile solvents					
	ANSI/NSF 61 approved for potable water contact					
Packaging	5 gallon pail. SikaFix LV Accelerator is available in 25 oz. cans 8/case. SikaFix Pump Flush is available in					
J	5 gallon pails.	iociorator io dvallable in 20				
	Typical Data (Material and curing conditions @ 73°F (23°C) and 50% R.H.)					
	Shelf Life 1 year in original unopened container					
	Packaging 5 gal metal pail, 25 oz bottle					
	Uncured					
	Solids	100%	ASTM D 2369 B			
	Viscosity at 77 F	650 cps +/- 200	ASTM D 2196 A			
	Color	Pale yellow				
	Density	8.70 - 9 17 lbs/gal	ASTM D 3754			
	Flashpoint GOC method	>270 F	ASTM D 93			
	Corrosiveness Non-corrosive					
	SikaFix HH LV Accelerator					
	Appearance	Transparent liquid				
	Viscosity at 77 F	5-16 cps	ASTM D 2196			
	Flashpoint COC Method	338 F	ASTM D 93			
	Cured					
	Density	8.70 - 9.17 lbs/gal	ASTM D3574			
	Tensile Strength	150 psi	ASTM D 190 63			
	Elongation	250%				
	Shrinkage	less than 4%	ASTM D 1042			
	Absorption	10%	After 6 months immersion			

Cure Mechanism		Reactivity		
		% SikaFix HH LV accelerator	Geltime in minutes/seconds	
	at 50 F	1%	7 m 50 s	
		3%	3 m 50 s	
	at 68 F	1%	6 m 00s	
		3%	3 m 00s	
	at 86 F	1%	5 m 50S	
		3%	2 m 30 S	
	1% of Sikal	Fix HH I V Accelerator = 1.3 oz nor galle	on of SikaFiy HH I V	



How to Use Surface Preparation

When the crack is contaminated at the outside, it will be necessary to clean the crack surface so that the crack can be exactly located. If the crack is wide or high water flows are encountered, it will be necessary to seal the surface of the crack with a surface sealing material (SikaSet Plug, Sikadur 31 Hi Mod Gel oropen cell polyurethane foam saturated with SikaFix HH LV). The surface sealing can be done before or after drilling the injection holes, depending on the particular situation. Prior to installation the material should be agitated by vigorously shaking the 5-gallon pail or by mixing with a jiffy mixer or bung mixer. Prior to using SikaFix HH LV accelerator, the can should be shaken vigorously as the contents may settle during storage. The grout should never be used with more SikaFix HH LV accelerator than the amount recommended on this TDS. Excess acceleration will cause vigorous expansion that is prone to shrinkage. Pour the desired amount of SikaFix HH LV into a clean pall. Measure the appropriate amount of HH LV accelerator and pour it into the SikaFix HH LV and stir until adequately Mixing Begin by drilling %" diameter holes along the side of the crack at a 45 degree angle. Drill the hole to intersect the crack midway through the substrate. Install injection packers in the holes and tighten. Spacing of the injection ports depends on crack width, but normal varies from 6" to 36". It is always necessary to flush the Application drilled holes with water to remove debris and drill dust from the holes and crack. This will also insure that the crack is wet enough to react with the grout when it is introduced to the crack. Begin the injection of the grout as the lowest packer installed on a vertical crack or at the first packer flushed for a horizontal crack. During the injection, you will notice that the SikaFix HH LV displaces water from the crack. Continue injecting until the grout appears at the adjacent packer hole. Stop pumping and reinstall the packer in the adjacent hole, tighten the packer and move the pump hose to the second packer and begin injection. Continue the process until 3-4 packers have been grouted. Disconnect and go hack to the first packer and inject all the ports for the second time. Some ports may take additional grout, which will fill up and further densify the material in the crack. Continue process until the length of the prepared crack is injected. Note: Injection pressure will vary from 200 psi to 2500 psi depending on the width of the crack, thickness of concrete and condition of concrete Finishing: When finished with the injection process, re-inject each installed packer with a small amount of water. This will react with the resin left behind in the drill hole. After the injection, the packers or injection ports can be cut flush with the concrete surface or can be removed from the injection holes. Let SikaFix HH LV completely cure before removing the packers. Packer holes can be filled with Sikadur 31 or SikaSet Plug and troweled smooth Removal: Residual resin that has foamed from the crack can be removed with a scrapper provided that is not cured to a solid on the surface. If the material has cured, remove with a wire brush or hand held grinders. SikaFix HH LV will aggressively bond to concrete surfaces. Limitations Low temperatures will significantly affect viscosity If SikaFix HH LV accelerator is allowed to freeze, it will lower performance of the product. Avoid splashing water into open containers, as material is water activated Water used to activate SikaFix HH LV must be in a range of pH 3-10 for optimum foam quality Do not exceed 80 F when warming Storage Store in a dry area using original reselable containers Low temperatures will affect viscosity. To minimize this effect, store the product at normal room temperature for a minimum period of 24 hours prior to use. If site temperatures are extremely low, heat bands or heated water baths may be used on the pails here of the products temperature. Immerse only the lower 2/3 of the pails. Avoid splashing water into open containers. Conditioning WARNING: IRRITANT, SENSITIZER. Contains Diethylene Glycol Monoethyl Ether Acetate (CAS 112-15-2), Phosphoric Acid (CAS 7664-38-2), Polyalkylene Oxidemethyl-Siloxane Copolymer (CAS Trade Secret), Polyether Polyol (CAS 9082-00-2), Polyether Polyol (CAS 9003-11-6), Toluene Diisocyanate (Mixed Isomers) (CAS 26471-62-5). Causes eye Irritation. May cause skin/respiratory irritation. May cause skin and/or respiratory sensitization after prolonged contact. May be harmful if swallowed Deliberate misuse by inhalation of vapors may be harmful or fatal. Strictly follow all usage handling and storage instructions. Caution Eyes – Hold eyelids apart and flush thoroughly with water for 15 minutes. Skin – Remove contaminated clothing. Wash skin thoroughly for 15 minutes with soap and water. Inhalation – Remove to fresh air. Ingestion – Do not induce vomiting Dilute with water. Contact physician. In all cases contact a physician First Aid immediately if symptoms persist. Avoid direct contact. Wear personal protective equipment (chemical resistant goggles/gloves/clothing) to prevent direct contact with skin and eyes. Use only in well ventilated areas. Open doors and windows during use. Use a properly fitted NIOSH respirator if ventilation is poor. Wash thoroughly with soap and water after Handling & Storage use. Remove contaminated clothing and launder before reuse. Clean Up Use personal protective equipment (chemical resistant gloves/ goggles/clothing). Without direct contact, remove spilled or excess product and placed in suitable sealed container. Dispose of excess product and container in accordance with applicable environmental regulations. KEEP CONTAINER TIGHTLY CLOSED KEEP OUT OF REACH OF CHILDREN NOT FOR INTERNAL CONSUMPTION FOR INDUSTRIAL USE ONLY CONSULT MATERIAL SAFETY DATA SHEET FOR MORE INFORMATION

SIKA warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Technical Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor.

NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTIBILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS

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Sika Canada Inc. 601 Delmar Avenue Pointe Claire Quebec H9R 4A9 Phone: 514-697-2610 Fax: 514-694-2792

Sika Mexicana S.A. de C.V. Carretera Libre Celaya Km. 8 5 Fracc. Industrial Balvanera Corregidora Queretaro C.P. 76920 Phone: 52 442 2385800 Fax: 52 442 2250537





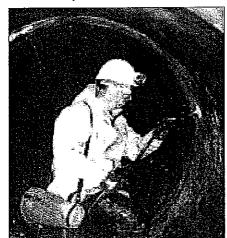
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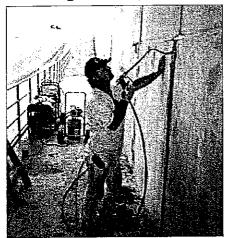
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SikaFix® HH+, HH LV & HH Hydrophilic







SikaFix® HH +

APPLICATION

- Fill joints or cracks in concrete structures that exhibit some movement
- May also be used in applications with high pressure flowing

ADVANTAGES

- Easy to apply, One component with accelerator
- Hydrophobic, only a small amount of water is needed for
- Expands 15 times the liquid volume
- Nonflammable
- Adjustable set times using accelerator
- Contains no volatile solvents
- ANSI/NSF 61 approved for potable water contact

KEY DATA

Typical Data

(Material and curing conditions @ 73° F (23° C) & 50% R H) Uncured:

▲ Solids	100%	ASTM D 2369
▲ Viscosity at 77° F	500-700 cps	ASTM 2196 A
▲ Flashpoint COC method	325° F	ASTM D 93
Cured		

8.75 - 9.17 lbs/gal ASTM D 3574 ▲ Density Tensile Strength 89 psi ASTM D 3574 Elongation 35% ASTM D 3574 Shrinkage less than 4% ASTM D 1042 Absorption

Hydrophobic

12% after 6 months immersion

- ▲ Hydrophobic reacts with water
- ▲ Absorbs very little water ▲ Cured material free of water
- ▲ Very low post cure shrinkage ▲ Seal moving cracks above and below grade
- ▲ Controlled reaction by adding accelerator

Vs.

Hydrophilic

- ▲ Hydrophilic incorporates water into chemical structure
 - Water can evaporate in dry environments causing cured material to shrink
- ▲ Product can shrink and swell depending on absorption or evaporation of water ▲ Seals moving cracks in continuously wet environments

SikaFix® HH LV

APPLICATION

Sealing leaks through concrete cracks and joints

ADVANTAGES

- Expands 10 times in volume depending upon the amount of SikaFix HH LV accelerator used
- Low viscosity permits injection into narrow hair line cracks
- Adjustable set times using accelerator
- Excellent elongation creates tight seal in moving cracks
- Contains no volatile solvents
- ▲ ANSI/NSF 61 approved for potable water contact

KEY DATA

Typical Data (Motodal and curing

7,	picai Dala (ivialenai anu cuni	ig conditions @ 73	F (23 G) & 30% R.H.)
À	Solids	100%	ASTM D 2369 B
Δ	Viscosity	650 cps +/- 200	ASTM 2196 A
▲	Flashpoint	270° F	ASTM D 93
A	Tensile strength	150 psi	ASTM D 190 63
▲	Elongation	250%	
\blacksquare	Shrinkage	less than 10%	ASTM D 10/2

 Absorption 10% after 6 months immersion

SikaFix® HH Hydrophilic

APPLICATION

Sealing leaks through concrete cracks and joints

ADVANTAGES

- Free foam expands 4 times its liquid volume
- One component

В

- Tenacious adhesion to wet and dry surfaces
- High elongation creates tight seal in moving cracks
- Contains no volatile solvents
- ANSI/NSF 61 approved for potable water contact

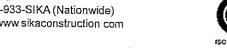
KEY DATA

Typical Data (Material and curing conditions @ 73° F (23° C) & 50% R.H.)

	Sulus	83%	ASTM D 2369 B
▲	Viscosity	650-800 csp	ASTM D 2196 A
A	Viscosity Flashpoint Reaction time 1:1 w/ wate Tensile strength Elongation Bonding Strength Shrinkage	225° F	ASTM D 92
A	Reaction time 1:1 w/ wat	er	20 sec @ 68° F
▲	Tensile strength	380 psi	ASTM D 3574-95
A	Elongation	400%	ASTM D 3574-95
▲	Bonding Strength	250-300 psi	
A	Shrinkage	less than 10%	ASTM D 1042

Contact Sika at:

Phone: 1-800-933-SIKA (Nationwide) Website: www.sikaconstruction.com

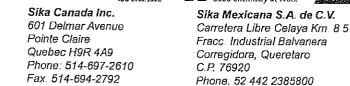


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SIKA...INNOVATIVE SOLUTIONS FOR A CONCRETE WORLDSM

Product Data Sheet Edition 7.2008 Identification no. Sikadur Epoxy Broadcast Overlay System

Sikadur® Epoxy Broadcast **Overlay System**

Description	Sikadur Epoxy Broadcast Overlay System is a 2-component, moisture-tolerant, 100% solids epoxy resin binder for a traffic-bearing skid-resistant, seamless, protective, overlay system for application by the broad cast method.
	The Sikadur Epoxy Broadcast Overlay System uses Sikadur 22 Lo-Mod as the binder coat. Sikadur Epoxy Broadcast overlay System can be used with and without a primer as needed. The system conforms to the current ASTM C-881 and AASHTO M-235 specifications.
Where to Use	Use for exterior above grade, i.e., bridge decks, parking structures, ramps and interior applications requiring a protective, abrasion- and skid-resistant overlay with long-term durability and performance.
Advantages	 System is moisture-tolerant before, during, and after cure. Excellent adhesive properties to most substrates. Convenient, easy mix ratio A:B = 1:1 by volume. Superior, long-term abrasion resistance and durability even at elevated temperatures. Easy care, skid-resistant overlay for bridge decks, parking structures, ramps, loading docks industrial floors, etc.
Coverage	Prime coat: approximately 200-250 sq. ft./gal. Binder coat: approximately 32 sq. ft./gal. (50 mils). Broadcast aggregate: 2 lb./sq. ft. to excess, Seal coat: approximately 150-200 sq. ft. /gal.
Packaging	Sikadur 22 Lo-Mod 4-gal. units.
How to Use	
Surface Preparation	Surface must be clean and sound. It may be dry or damp, but free of standing water. Remove dust, laitance, grease, curing compounds, impregnations, waxes, foreign particles and disintegrated materials.

Typical Data [Material and curing conditions @ 73°F (23°C) and 50% R.H.]

Shelf Life

2 years in original unopened containers.

Storage Conditions

Store dry at 40°-95°F (4-35°C). Condition material to 65°-85°F (18-29°C) be-

fore using.

Color

Clear, light amber.

Mixing Ratio

Component 'A': Component 'B' 1:1 by volume.

Viscosity (Mixed)

Approximately 2,500 cps.

Pot Life

Approximately 30 minutes (200 gram mass)

Tack-Free Time

Open Time

40°F (4°C): 21 hrs. 73°F (23°C): 4 hrs.

Light foot traffic: 4-6 hrs. Rubber-wheel traffic: 8-10 hrs.

Tensile Properties (ASTM D-638) 14 day Tensile Strength

Broadcast 1:2.25 2,200 psi (15.2 MPa)

Elongation at Break Modulus of Elasticity

1.1% 4 7 x 105 psi (3 240 MPa)

90°F (32°C): 2 hrs.

Flexural Properties (ASTM D-790)

14 day

Flexural Strength (Modulus of Rupture)

Tangent Modulus of Elasticity in Bending

4,300 psi (29.7 MPa) 9.0 x 10⁵ psi (6 205 MPa)

Shear Strength (ASTM D-732)14 day

3,300 psi (22.7 MPa)

Bond Strength (ASTM C-882): Hardened Concrete to Hardened Concrete

2 day (dry cure) 14 day (moist cure) Bond Strength

Bond Strength

1,100 psi (7.5 MPa) 1,600 psi (11 MPa)

Heat Deflection Temperature (ASTM D-648)

14 day [fiber stress loading 66 psi (0 46 MPa)] 111°F (44°C)

Abrasion (Taber Abrader) (H-22 wheel; 1 000 gm weight) 14 day Weight loss, 1,000 cycles 1.61 gm

Compressive Properties (ASTM D-695)

Compressive Strength, psi

		Broadcast (1:2.3	25)
	40°F* (4°C)	73°F* (23°C)	90°F* (32°C)
8 hour	-	70 (0.48)	3,500 (24.1)
16 hour	-	1,850 (12.8)	4.400 (30.3)
1 day	60 (0.4)	3,150 (21.7)	4 600 (31.7)
3 day	1,700 (117)	6,900 (47.6)	5 000 (34.5)
7 day	6,700 (46.2)	7,500 (51.7)	5,400 (37.2)
14 day	8.400 (58.0)	7,800 (53.8)	5,900 (40.7)
28 day	8 450 (58 3)	7,850 (54 1)	6,300 (43.4)

Compressive Modulus

7 day: 1.25 x 10⁵ psi (862 MPa) 28 day: 1.66 x 10⁵ psi (1,145 MPa)



"Material cured and tested at the temperatures indicated

Preparation Work: Concrete - Sandblast or use other approved mechanical means. Steel - Should be cleaned and prepared thoroughly by blast cleaning. Mixing Pre-mix each component. Proportion equal parts by volume of Components 'A' and 'B' into a clean mixing container. Mix with a low-speed (400-600 rpm) drill and Sika paddle for 3 minutes, until uniform. Mix only that quantity that can be used within its pot life. Application Priming: Use of primer is optional but highly recommended. Primer should be used where sealing of non-moving existing cracks is desired Sikadur 21 Lo-Mod LV or Sikadur 22 Lo-Mod can be used as primer coats. Prime the prepared substrate with neat Sikadur 21, Lo-Mod LV or Sikadur 22, Lo-Mod using a roller or flat squeegee. Coverage should be approximately 200-250 sq. ft./gal. While the primer is still tacky apply the binder material with a 3/16 in. notched-rubber squeegee. Allow the binder to self-level. Cracks: Static (non-moving) cracks ≤1/8 in., gravity feed with an appropriate sealer/healer material. Dynamic cracks ≥1/8 in should be treated as joints and sealed with an appropriate joint sealer. Broadcast: Slowly broadcast an oven-dried sand so that the sand falls vertically into the binder (at a rate of 2 lbs./sf). Other sources of aggregate may be used but must conform to the minimum gradation standard. Continue to broadcast lightly making several passes, allowing the binder to bleed through the sand before making next pass. Cover completely with sand before binder becomes tack-free. Typical gradation: Mesh 0-5 35-50 40-55 3.0 - 8.0≥1 ≥,75 Hardness: Mohs scale, min. ≥ 6 After broadcast system has reached sufficient cure as not to be damaged, remove excess sand (this will be dependent on material, air and substrate temperatures). After all excess sand has been removed apply a seal coat of neat Sikadur 22, Lo Mod** over the entire area. Care should be exercised to eliminate voids or bare spots. Sealer coat of Sikadur 22, Lo Mod may be applied at recommended coverage of 150-200 sq. ft /gal.) or to desired finish. Unless otherwise specified a seal coat is optional, especially on surfaces where a reduction in skid resistance is not optimal (i.e. bridge decks_ramps). **Aliphatic urethanes or other compatible sealer coats may be used. Please contact Sika's Technical Service Department before use. When applying multiple courses: The subsequent binder coat is applied to the preceding course after it has reached sufficient cure, so as not to be damaged and the excess broadcast aggregate has been removed. Note that the consumption and coverage rate of the additional binder coat will vary depending upon the type, size and gradation of the aggregate being used. A reduction factor of approximately 10-20% is customary. Limitations Minimum substrate and ambient temperature 40°F (4°C) Do not apply over wet, glistening surface. Material is a vapor barrier after cure Minimum age of concrete prior to application is 21-28 days, depending on curing and drying conditions. Porous substrates must be tested for moisture-vapor transmission prior to application (Ref. ASTM D-4263). Do not apply to exterior, on-grade substrates. Use oven-dried aggregate only. Do not thin with solvents Not an aesthetic product. Color may alter due to variations in lighting and/or UV exposure. Caution Component 'A' - Irritant; Sensitizer - Contains epoxy resin. Can cause skin sensitization after prolonged or repeated contact. Skin and eye irritant. High concentrations of vapor may cause respiratory irritation. Avoid skin contact, Use only with adequate ventilation. Use of safety goggles and chemical resistant gloves is recommended. In case of exceedance of PELs, use an appropriate, properly fitted NIOSH approved respirator. Remove contaminated clothing. Consult MSDS for more detailed information. Component 'B' - Corrosive; Sensitizer - Contains amines. Contact with eyes or skin may cause severe burns. Skin and eye irritant. High concentrations of vapor may cause respiratory irritation. Avoid skin contact. Use only with adequate ventilation, Use of safety goggles and chemical-resistant gloves is recommended. In case of exceedance of PELs, use an appropriate, properly fitted NIOSH approved respirator. Remove contaminated clothing, Consult MSDS for more detailed information. First Aid Components 'A' and 'B' Eyes: Flush immediately with plenty of water for 15 minutes. Skin: Remove contaminated clothing. Wash skin immediately and thoroughly with soap and water Inhalation: Remove person to fresh air. Ingestion: Do not induce vomiting. In all cases, contact a physician immediately if symptoms persist. Ventilate area. Confine spill. Collect with absorbent material. Dispose of in accordance with current, ap-Clean Up

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plicable local, state and federal regulations. Uncured material can be removed with approved solvent. Cured material can only be removed mechanically.

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Product Data Sheet Edition 6.16 2009 Identification no. Sikagard® FlexCoat

Sikagard® FlexCoat - Cementitious Protective Coating

Two-component, polymer-modified, waterproof, cement-based coating system

Description	Sikagard FlexCoat is a polymerized cementitious protective coating. It consists of a unique rubber-like polymer liquid (Part A) mixed at the time of application with a cement aggregate blend (Part B).
Where to Use	Balcony deck surfacing Concrete exterior restoration Sidewalk resurfacing Wall refinishing and installation coating Stadium renovation Swimming pool walkways
Advantages	It can be applied over almost any clean, sound surface e.g. concrete, block, masonry, etc. for a number of different floor, wall and roof uses. Important characteristics of Sikagard FlexCoat are its extraordinary adhesion coupled with its ability to withstand prolonged pedestrian and light vehicular traffic. In these respects, the material is far superior to conventional cementitious coatings. Sikagard FlexCoat provides a waterproof coating which substantially reduces or prevents water penetration, freeze-thaw scaling and concrete carbonation. It is a "breathable" coating which releases normal entrapped vapor without loosening or blistering. Sikagard FlexCoat is available in natural cement color.
Packaging	55 lb. bag. and 2.5 gallon liquid (packaged in 3.5 gallon pail) = 1 unit.
Coverage	Sikagard FlexCoat is applied in two coats. Each coat should be applied at 250 sq.ft /unit. A total of 60 mils total thickness is required. On-site results for coverage will vary.

Typical Data (Material and curing conditions @ 75°F {24°C}

Shelf Life

1 year in original, unopened packaging

Storage Conditions

Store dry at 40-95°F(4-35°C). Condition material to 65-75°F before using

Adhesion (ASTM C-882), Type I

515 psi

Absorption

<2%

Weight gain by 4" coated concrete cube

after 21 days water immersion

Weathering (ASTM G23) Weatherometer)

No visible degradation

Method 1 procedure, 60 cycles

Hydrocarbon Substances Resistance (ASTM D-1308, Spot Open Test) 21 days repeated reapplication of gasoline

No softening or attack

motor oil SAE-10 jet fuel

Resistance to Wind-Driven Rain

Fed Spec. TT-C-558 (8 hrs.) & TT-P-0035 (24 hrs.) At 5 water pressure and 60 gal /hr. water flow No water or dampness noted on back of test panels

Compressive Strength (ASTM C-109)

2,440 psi

Tensile Strength (ASTM C-190)

430 psi

Elongation (ASTM D-412)

12%

Shore Hardness (ASTM D-2240)

Durometer A" - 82

Impact Resistance (MIL-D-3134, Para. 4.7.3.)

No cracking or detachment (2 lb steel ball dropped

from 8 ft. height on to coated steel plate)

Water Vapor Permeability (E-96)

1.96 perms/inches

Flammable Properties (ASTM E-84 Steiner Tunnel Test)

Flame Spread - 4 Smoke Density - 0

Fire Resistance (UL790)

Complies as Class A

How to Use

Surface Preparation

Prepare surfaces by removal of dirt, foreign matter plus patching in accordance with manufacturer's recommendations. An open textured surface ICRI CSP.3 is recommended. Deeper areas shall be patched with appropriate patch material like SikaQuick or SikaRepair products. The material is applied in multiple coats by

brush, roller, trowel or spray to a typical thickness of 60 mils.

Mixing

Place the liquid component in appropriate mixing container. It is always recommended to start mixing with approximately 80% of the liquid. Add the powder while continuing to mix. Mix to a uniform consistency maximum 3 minutes. Mechanically mix with a low-speed drill (400-600 rpm) and paddle



Application	Pre-wet surface to SSD (Saturate Surface Dry). Insure good intimate contact with the substrate is achieved. Sikagard FlexCoat can be applied with brush, roller, trowel or spray application.
	Apply first coat of Sikagard FlexCoat. Apply following coats (one or two depending on service conditions/ requirements) by brush, trowel roller or spray. Finish to specified texture. Color Finish (optional) – apply Sikagard FlexCoat ATC acrylic top coat for color finish, when specified in two coats by roller, brush or spray
	Caution: Do not install Sikagard FlexCoat in cold weather (i.e. below 50°F/10°C) or when rainfall can be expected prior to material setting.
Curing	Protect newly applied Sikagard FlexCoat from direct sunlight, wind, rain and freezing.
Overpainting	In normal 73°F and 50% relative humidity conditions Sikagard FlexCoat can be typically top coated with Sikagard FlexCoat ATC after 24 hours.
Limitations	 Apply product in temperatures > 50°F (7°C) and rising. Minor shade variation may occur with natural cement color material. Not suitable for use in areas where acids or other aggressive chemicals are spilled Top coats strongly recommended for color uniformity. Will reflect working concrete cracks. Static and moving cracks can be detailed in accordance with accepted industry practices of using embedding mesh or other methods to reduce the reflecting of cracks. Sikagard FlexCoat is a dense, cement-based waterproofing material that is vapor permeable. This product will not create a vapor barrier. Efflorescence in the existing substrate can result in the failure of the bond or discoloration of the surface if there are areas of concrete that are not protected from water ingress. Sikagard FlexCoat has been tested with Sikagard Flexcoat ATC. Use of any other top coat needs to be tested for compatibility and performance. As with all cement based materials, avoid contact with aluminum to prevent adverse chemical reaction and possible product failure. Insulate potential areas of contact by coating aluminum bars, rails, posts etc. with an appropriate epoxy such as Sikadur 32 Hi-Mod.
CAUTION	COMPONENT A: WARNING: IRRITANT, SENSITIZER. Contains Vinyl Acetate (CAS:108-05-4), Ethylene Vinyl Acetate Copolymer (CAS: 24937-78-8). May cause eye/skin/respiratory irritation. May be harmful if swallowed. Reports have associated repeated and prolonged exposure to some of the chemicals in this product with permanent brain, liver, kidney and nervous system damage. Headaches and dizziness may result. Deliberate misuse by inhalation of vapors may be harmful or fatal. COMPONENT A: WARNING: This product contains a chemical known to the State of California to
	cause cancer and birth defects or other reproductive harm. COMPONENT B: CAUTION: IRRITANT. Contains Portland Cement (CAS 65997-15-1), Limestone (CAS: 1317-65-3), Calcium Alumniate (CAS: 12042-78-3). Causes eye irritation. May cause skin/respiratory irritation. May cause delayed lung damage (silicosis). May be harmful if swallowed.
Handling and Storage	Avoid direct contact with eyes and skin. Wear chemical-resistant clothing / gloves / goggles. Avoid breathing vapors. Use with adequate general and local ventilation. If ventilation is poor, use a properly fitted, NIOSH-approved respirator. Wash thoroughly after handling product. Remove contaminated clothing and launder before reuse.
First Aid	Eyes: Hold eyelids apart and flush thoroughly with water for 15 minutes. Skin: Remove contaminated clothing. Wash skin thoroughly for 15 minutes with soap and water. Inhalation: Remove person to fresh air. Ingestion: Do not induce vomiting. In all cases, contact a physician immediately if symptoms persist.
Clean Up	Wear chemical resistant gloves/goggles/clothing. In absence of proper ventilation use properly fitted NIOSH respirator. Confine spill, collect using absorbent material and place in properly sealed container. Dispose of excess product in accordance with applicable local state and federal regulations.

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Product Data Sheet Edition 8 2003 Identification no. 189 SikaTop 122 Plus

SikaTop® 122 PLUS

Two-component, polymer-modified, cementitious, trowel-grade mortar plus FerroGard 901 penetrating corrosion inhibitor

•		. •
Description	mortar. It is a high pe	a two-component, polymer-modified, portland-cement, fast-setting, trowel-grade rformance repair mortar for horizontal and vertical surfaces and offers the erroGard 901, a penetrating corrosion inhibitor.
Where to Use	 On horizontal surface As a structural repair and ramps. To level concrete surface 	rmaterial for parking structures industrial plants, walkways, bridges, tunnels dams, rfaces. In for topping/resurfacing concrete.
Advantages	 High abrasion resists Increased freeze/tha Compatible with coe Increased density-invaportransmission (Enhanced with Ferroconcrete. Not flammable, non- Conforms to ECA/Us USDA approved for the contraction of the c	Depens to traffic fast: foot in 4-6 hours, pneumatic tire in 8-12 hours ance aw durability and resistance to deicing salts. Ifficient of thermal expansion of concrete - Passes ASTM C-884 (modified) approved carbon dioxide resistance (carbonation) without adversely affecting water not a vapor barrier). Digard 901, a penetrating corrosion inhibitor - reduces corrosion even in the adjacent toxic. SPHS standards for surface contact with potable water.
Yield		, 0.75 cu. ft./unit concrete; (SikaTop 122 + 42 lbs. 3/8 pea gravel)
Packaging	Component 'A' - 1-ga	al. plastic jug; 4/carton. Component 'B' -61.5-lb. multi-wall bag.
	Typical Data (Mate	erial and curing conditions @ 73°F (23°C) and 50% R.H.)
	Shelf Life	One year in original, unopened packaging
	Storage Conditions	Store dry at 40°-95°F, Condition material to 65°-75°F before using. Protect Component 'A' from freezing. If frozen, discard.
	Color	Concrete gray when mixed

Mixing Ratio Plant-proportioned kit, mix entire unit

Application Time Approximately 30 minutes.

FinishingTime 50-120 minutes

Note: All times start after adding Component 'B' to Component 'A' and are highly affected by tempera-

ture, relative humidity, substrate temperature, wind, sun and other job site conditions.

Density (wet mix) 136 lbs./cu.ft. (2.18 kg./l)

Flexural Strength (ASTM C-293) 28 days 2,000 psi (13.8 MPa) Splitting Tensile Strength (ASTM C-496) 28 days 750 psi (5.2 MPa)

Bond Strength* (ASTM C-882 modified) 28 days 2,200 psi (15 2 MPa)

Compressive Strength (ASTM C-109) 1 day 3,000 psi (20.7 MPa)

7 days 5,500 psi (37.9 MPa) 28 days 7,000 psi (48.3 MPa)

Permeability (AASHTOT-277) 28 days Approx. 500 Coulombs. Electrical resistivity (ohm-cm) 28,000

Freeze/Thaw Resistance (ASTM C-666) 300 cycles 98%

Corrosion Testing for FerroGard 901

Cracked Beam Corrosion Tests:

Reduced corrosion rates 63% versus control specimens

ASTM G109 modified after 400 days

" Mortar scrubbed into substrate.

How to Use

Substrate Concrete, mortar, and masonry products.

Surface Preparation - Concrete/Mortar: Remove all deteriorated concrete, dirt, oil, grease, and all bond-inhibiting materials from surface. Be sure repair area is not less than 1/8 inch in depth. Preparation work should be done by high pressure water blast, scabbler, or other appropriate mechanical means to obtain an exposed aggregate surface with a minimum surface profile of ±1/16 inch (CSP-5). Saturate surface with clean water. Substrate should be saturated surface dry (SSD) with no standing water during application.

Reinforcing Steel: Steel reinforcement should be thoroughly prepared by mechanical cleaning to remove all traces of rust. Where corrosion has occurred due to the presence of chlorides, the steel



should be high-pressure washed with clean water after mechanical cleaning. For priming of reinforcing steel use Sika Armatec 110 EpoCem (consult Technical Data Sheet). Priming Concrete Substrate: Prime the prepared substrate with a brush or sprayed applied coat of Sika Armatec 110 EpoCem (consult Technical Data Sheet) Alternately, a scrub coat of SikaTop 122 Plus can be applied prior to placement of the mortar. The repair mortar has to be applied into the wet scrub coat before it dries. Mixing Pour approximately 7/8 of Component 'A' into the mixing container. Add Component 'B' (powder) while mixing continuously. Mix mechanically with a low-speed drill (400-600 rpm) and mixing paddle or mortar mixer. Add remaining Component 'A' (liquid) to mix if a more loose consistency is desired. Mix to a uniform consistency, maximum 3 minutes. Thorough mixing and proper proportioning of the two components is necessary. For SikaTop 122 PLUS concrete: Pour all of Component 'A' into mixing container Add all of Component 'B' while mixing, then introduce 3/8 inch coarse aggregate at desired quantity. Mix to uniform consistency, maximum 3 minutes. Addition rate is 42 lbs. per bag (approx. 3.0 to 3.5 gal. by loose volume). The aggregate must be non-reactive (reference ASTMC1260 C227 and C289), clean, wellgraded, saturated surface dry, have low absorption and high density, and comply with ASTM C 33 size number 8 per Table 2 Note: Variances in the quality of the aggregate will affect the physical properties of SikaTop 122 PLUS. The yield is increased to 0.75 cu ft /unit with the addition of the aggregate (42 lbs.) Do not use limestone aggregate. Application & Finish SikaTop 122 PLUS must be scrubbed into the substrate, filling all pores and voids. Force material against edge of repair, working toward center. After filling repair, consolidate, then screed. Allow mortar or concrete to set to desired stiffness, then finish with wood or sponge float for a smooth surface, or broom or burlap-drag for a rough finish. Curing As per ACI recommendations for portland cement concrete, curing is required. Moist cure with wet burlap and polyethylene, a fine mist of water or a water based* compatible curing compound. Curing compounds adversely affect the adhesion of following layers of mortar, leveling mortar or protective coatings. Moist curing should commence immediately after finishing. Protect newly applied material from direct sunlight, wind, rain and frost *Pretesting of curing compound is recommended. Limitations Application thickness: Max. in one lift Min. 1/8 inch (3 mm) 1 inch (25 mm) Neat Extended 1 inch (25 mm) 4 inches (100 mm) ■ Minimum ambient and surface temperatures 45°F (7°C) and rising at time of application. Addition of coarse aggregates may result in variations of the physical properties of the mortar Do not use solvent-based curing compound. Size, shape and depth of repair must be carefully considered and consistent with practices recommended by ACI. For additional information, contact Technical Service. For additional information on substrate preparation, refer to ICRI Guideline No.03732 Coatings, and Polymer Overlays. If aggressive means of substrate preparation is employed, substrate strength should be tested in accordance with ACI 503 Appendix A prior to the repair application. ■ As with all cement based materials, avoid contact with aluminum to prevent adverse chemical reaction and possible product failure. Insulate potential areas of contact by coating aluminum bars, rails, posts etc. with an appropriate epoxy such as Sikadur Hi-Mod 32 Caution Component 'A' - Irritant - May cause skin/eye/respiratory irritation Avoid breathing vapors. Use with adequate ventilation. Avoid skin and eye contact. Safety goggles and rubber gloves are recommended Component B' - Irritant; suspect carcinogen - Contains portland cement and sand (crystalline silica). Skin and eye irritant. Avoid contact: Dust may cause respiratory tract irritation. Avoid breathing dust. Use only with adequate ventilation May cause delayed lung injury (silicosis) IARC lists crystalline silica as having sufficient evidence of carcinogenicity in laboratory animals and limited evidence of carcinogenicity in humans. NTP also lists crystalline silica as a suspect carcinogen. Use of safety goggles and chemical resistant gloves is recommended. If PELs are exceeded an appropriate, NIOSH approved respirator is required. Remove contaminated clothing, First Aid In case of skin contact, thus thoroughly with soap and water. For eye contact, thus immediately with plenty of water for at least 15 minutes, and contact a physician. For respiratory problems, remove person to fresh air. Clean Up In case of spillage, scoop or vacuum into appropriate container and dispose of in accordance with current, applicable local, state and federal regulations. Keep container tightly closed and in an upright position to prevent spillage and leakage Mixed components: Uncured material can be removed with water Cured material can only be removed mechanically. KEEP CONTAINER TIGHTLY CLOSED KEEP OUT OF REACH OF CHILDREN NOT FOR INTERNAL CONSUMPTION FOR INDUSTRIAL USE ONLY CONSULT MATERIAL SAFETY DATA SHEET FOR MORE INFORMATION Sika warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current technical data sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. Vísit our website at www.sikausa.com 1-800-933-SIKA NATIONWIDE Regional Information and Sales Centers. For the location of your nearest Sika sales office, contact your regional center Sika Corporation Sika Canada Inc. Sika Mexicana S.A. de C.V 201 Polito Avenue Lyndhurst, NJ 07071 Phone: 800-933-7452 Carretera Libre Celaya Km. 8 5 601 Delmar Avenue Corregidora, Queretaro C.P. 76920 A.P. 136 Phone: 5242 25 0122 Pointe Claire Quebec H9R 4A9 Phone: 514-697-2610 Fax: 201-933-6225

Fax: 514-694-2792

Fax: 52 42 25 0537

Product Data Sheet Edition 8.2003 Identification no. 188 SikaTop 123 Plus

SikaTop® 123 PLUS

Two-component, polymer-modified, cementitious, non-sag mortar plus FerroGard 901 penetrating corrosion inhibitor

Description	SikaTop 123 PLUS is a two-component, polymer-modified, portland cement, fast-setting, non-sag mortar. It is a high performance repair mortar for vertical and overhead surfaces, and offers the additional benefit of FerroGard 901, a penetrating corrosion inhibitor.
Where to Use	 On grade, above, and below grade on concrete and mortar On vertical and overhead surfaces. As a structural repair material for parking structures, industrial plants, water/waste water treatment facilities, roads, walkways, bridges, tunnels, dams, ramps, etc. Approved for repairs over cathodic protection systems.
Advantages	 High compressive and flexural strengths. High early strengths. Increased freeze/thaw durability and resistance to de-icing salts Compatible with coefficient of thermal expansion of concrete - Passes ASTM C-884 (modified). Increased density - Improved carbon dioxide resistance (carbonation) without adversely affecting water vapor transmission (not a vapor barrier). Enhanced with Ferro Gard 901, a penetrating corrosion inhibitor - reduces corrosion even in the adjacent concrete. Not flammable, non-toxic. Conforms to ECA/USPHS standards for surface contact with potable water. USDA approved. ANSI/NSF Standard 61 potable water approved.
Yield	0.39 cu. ft./unit.
Packaging	Component 'A' - 1 gal. plasticjug; 4/carton. Component 'B' - 44 lb. multi-wall bag.

Typical Data (Material and curing conditions @ 73°F (23°C) and 50% R.H.)

Shelf Life One year in original, unopened packaging.

Storage Conditions Storedry at 40°-95°F. Condition material to 65°-75°F. before using.

Protect Component 'A' from freezing. If frozen, discard.

Color Concrete gray when mixed.

Mixing Ratio Plant-proportioned kit.

Application Time Approximately 15 min. after adding Component 'B' to Component 'A' Application

time is dependent on temperature and relative humidity.

20 to 60 min after combining components: depends on temperature, relative **FinishingTime**

humidity, and type of finish desired.

Density (wetMix) 132 lbs /cu ft (2 2 kg /l)

Flexural Strength (ASTM C-293) 28 days

2,000 psi (13.8 MPa) Splitting Tensile Strength (ASTM C-496) 28 days 900 psi (6.2 MPa)

Bond Strength* (ASTM C-882 modified) 28 days 2,200 psi (15.2 MPa)

Compressive Strength (ASTM C-109)

1 day 3,500 psì (24.1 MPa) 7 days 6,000 psi (41.4 MPa) 28 days 7,000 psi (48 3 MPa)

Permeability (AASHTOT-277)

Approximately 500 Coulombs Electrical resistivity (ohm-cm) 27,000

Freeze/Thaw Resistance (ASTM C-666)

Corrosion Testing for Ferro Gard 901

Cracked Beam Corrosion Tests:

Reduced corrosion rates 63% versus control specimens. ASTM G109 modified after 400 days

300 cycles

98%

Substrate Concrete, mortar, and masonry products.



from surface. Be sure repair area is not less than 1/8 inch in depth. Preparation work should be done by high pressure water blast, scabbler, or other appropriate mechanical means to obtain an exposed aggregate surface with a minimum surface profile of ±1/16 in (CSP-5) Saturate surface with clean water. Substrate should be saturated surface dry (SSD) with no standing water during application. Reinforcing Steel: Steel reinforcement should be thoroughly prepared by mechanical cleaning to remove all traces of rust. Where corrosion has occurred due to the presence of chlorides, the steel should be highpressure washed with clean water after mechanical cleaning. For priming of reinforcing steel use Sika Armatec 110 EpoCem (consult Technical Data Sheet). Priming Concrete Substrate: Prime the prepared substrate with a brush or sprayed applied coat of Sika Armatec 110 EpoCem (consult Technical Data Sheet). Alternately, a scrub coat of Sika Top 123 can be applied prior to placement of the mortar. The repair mortar has to be applied into the wet scrub coat before it dries. Pour Component 'A' into mixing container. Add Component 'B' while mixing continuously. Mix mechanically Mixina with a low-speed drill (400 - 600 rpm) and mixing paddle or mortar mixer. Mix to a uniform consistency, maximum 3 minutes. Manual mixing can be tolerated only for less than a full unit. Thorough mixing and proper proportioning of the two components is necessary. SikaTop 123 PLUS must be scrubbed into the substrate, filling all pores and voids. Force material against Application & Finish edge of repair, working toward center. After filling repair, consolidate, then screed. Material may be applied in multiple lifts. The thickness of each lift, not to be less than 1/8 inch minimum or more than 1.5 inches maximum. Where multiple lifts are required score top surface of each lift to produce a roughened surface for next lift. Allow preceding lift to reach final set, 30 minutes minimum, before applying fresh material. Saturate surface of the lift with clean water. Scrub fresh mortar into preceding lift. Allow mortar or concrete to set to desired stiffness, then finish with wood or sponge float for a smooth surface. As per ACI recommendations for portland cement concrete, curing is required. Moist cure with wet burlap and Curing polyethylene, a fine mist of water or a water based*, compatible curing compound. Curing compounds adversely affect the adhesion of following lifts of mortar, leveling mortar or protective coatings. Moist curing should commence immediately after finishing. If necessary protect newly applied material from direct sunlight, wind, rain and frost. *Pretesting of curing compound is recommended. Limitations Application thickness: Minimum 1/8 inch (3 mm). Maximum in one lift - 1.5 in. (38 mm). Minimum ambient and surface temperatures 45°F (7°C) and rising at time of application Do not use solvent-based curing compound. Size, shape and depth of repair must be carefully considered and consistent with practices recommended by ACI. For additional information, contact Technical Service. For additional information on substrate preparation, refer to ICRI Guideline No. 03732 Coatings, and If aggressive means of substrate preparation is employed, substrate strength should be tested in accordance with ACI 503 Appendix A prior to the repair application. As with all cement based materials, avoid contact with aluminum to prevent adverse chemical reaction and possible product failure. Insulate potential areas of contact by coating aluminum bars, rails, posts etc. with an appropriate epoxy such as Sikadur Hi-Mod 32. Caution Component 'A' - Irritant - May cause skin/eye/respiratory irritation Avoid breathing vapors Use with adequate ventilation. Avoid skin and eye contact. Safety goggles and rubber gloves are recommended. Component 'B' - Irritant; suspect carcinogen - Contains portland cement and sand (crystalline silica) Skin and eye irritant. Avoid contact Dust may cause respiratory tract irritation. Avoid breathing dust. Use only with adequate ventilation May cause delayed lung injury (silicosis) IARC lists crystalline silica as having sufficient evidence of carcinogenicity in laboratory animals and limited evidence of carcinogenicity in humans NTP also lists crystalline silica as a suspect carcinogen. Use of safety goggles and chemical resistant gloves is recommended if PELs are exceeded an appropriate NIOSH approved respirator is required. Remove contaminated clothing. First Aid In case of skin contact, wash thoroughly with soap and water. For eye contact, flush immediately with plenty of water for at least 15 minutes, and contact a physician. For respiratory problems, remove person to fresh air. In case of spillage, scoop or vacuum into appropriate container and dispose of in accordance with current Clean Up applicable local, state and federal regulations. Keep container tightly closed and in an upright position to prevent spillage and leakage Mixed components: Uncured material can be removed with water. Cured material can only be removed mechanically. KEEP OUT OF REACH OF CHILDREN KEEP CONTAINER TIGHTLY CLOSED FOR INDUSTRIAL USE ONLY NOT FOR INTERNAL CONSUMPTION CONSULT MATERIAL SAFETY DATA SHEET FOR MORE INFORMATION Sika warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current technical data sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. 1-800-933-SIKA NATIONWIDE Visit our website at www.sikausa.com

Sika Corporation

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Sika Canada Inc.

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Phone: 514-697-2610 Fax: 514-694-2792

Surface Preparation Concrete/Mortar: Remove all deteriorated concrete, dirt, oil, grease, and all bond-inhibiting materials

How to Use

Regional Information and Sales Centers. For the location of your nearest Sika sales office, contact your regional center Sika Mexicana S.A. de C.V. Carretera Libre Celava Km 8.5 Corregidora, Queretaro C.P. 76920 A P. 136

Phone: 52 42 25 0122 Fax: 52 42 25 0537

Product Data Sheet Edition 4.13 2009 Identification no. 431 Sikaflex-1a

Sikaflex®-1a

One part polyurethane, elastomeric sealant/adhesive



<u> </u>	
Description	Sikaflex-1a is a premium-grade, high-performance, moisture-cured, 1-component, polyurethane-based, non-sag elastomeric sealant. Meets Federal specification TT-S-00230C, Type II, Class A Meets ASTM C-920, Type S, Grade NS, Class 35, use T, NT, O, M, G, I; Canadian standard CAN/CGSB 19.13-M87.
Where to Use	 Designed for all types of joints where maximum depth of sealant will not exceed 1/2 in. Excellent for small joints and fillets, windows, door frames reglets flashing common roofing detail applications, and many construction adhesive applications. Suitable for vertical and horizontal joints; readily placeable at 40°F. Has many applications as an elastic adhesive between materials with dissimilar coefficients of expansion. Submerged conditions, such as canal and reservoir joints.
Advantages	 Eliminates time, effort and equipment for mixing, filling cartridges, pre-heating or thawing, and cleaning of equipment Fast tack-free and final cure times. High elasticity - cures to a tough durable, flexible consistency with exceptional cut and tear-resistance. Stress relaxation. Excellent adhesion - bonds to most construction materials without a primer. Excellent resistance to aging, weathering. Proven in tough climates around the world. NSF Registered, meets 1998 USDA guidelines. Odorless, non-staining. Jet fuel resistant. NSF Certified to NSF/ANSI Standard 61 for potable water contact. Urethane-based; suggested by EPA for radon reduction. Paintable with water-, oil- and rubber-based paints. Capable of ±35% joint movement.
Coverage	10.1 fl. oz. cartridge seals 12.4 lineal ft. of $1/2 \times 1/4$ in joint. 20 fl. oz. uni-pac sausage seals 24 lineal ft. of $1/2 \times 1/4$ in, joint.
Packaging	Disposable 10.1 fl oz. moisture-proof composite cartridges, 24/case; and uni-pac sausages 20 fl. oz. 20/

Typical Data (Material and curing conditions @ 73°F (23°C) and 50% R.H.)

Shelf Life

10.1 fl. oz. cartridges

12 months

20 fl. oz. uni-pac sausages

12 months

5 gallon pail

6 months

55 gallon drum

6 months

Storage Conditions

Store at 40°-95°F (4°-35°C). Condition material to 65°-75°F before using.

Colors

White, colonial white, aluminum gray, limestone, black, dark bronze, capitol tan

Special architectural colors on request

Application Temperature 40° to 100°F. Sealant should be installed when joint is at mid-range of its anticipated movement.

Service Range

-40° to 170°F

Curing Rate

Tack-free time 4 hours

Tack-free to touch 3 hours

Final cure

4 to 7 days

Tear Strength (ASTM D-624)

55 lb./in.

Shore A Hardness (ASTM D-2240) 21 day 40±5

Tensile Properties (ASTM D-412)

21 day Tensile Stress

175 psi (1 21 MPa)

Elongation at Break 5509 Modulus of Elasticity 25% 35 p.

Elasticity 25% 35 psi (0 24 MPa) 50% 60 psi (0 41 MPa)

0%

100% 85 psi (0.59 MPa)

Adhesion in Peel (TT-S-00230C, ASTM C 794)

Substrate Peel Strength Adhesion Loss Concrete 20 lb 0% Aluminum 20 lb 0%

Excellent

Aluminum 20 lb. Glass 20 lb.

Weathering Resistance

Chemical Resistance Good resistance to water, diluted acids, and diluted alkalines. Consult Technical Service for specific data.



How to Use Linear Feet of Sealant per Gallon Surface Preparation Clean all surfaces. Joint walls must be Depth sound, clean, dry, frost-free, and free of oil and grease. Curing compound residues and Inches 1/3 any other foreign matter must be thoroughly 308.0 removed. Install bond breaker tape or backer 1/2 154.0 77.0 rod to prevent bond at base of joint. 3/4 102.7 51.3 34.2 Priming Priming is not usually necessary. Most substrates only require priming if testing 1 77.0 38.5 25.7 19.3 indicates a need or where sealant will be 11/4 61.6 30.8 20.5 15.4 subjected to water immersion after cure. 11/2 51.3 25.7 17.1 12.8 Consult Sikaflex Primer Technical Data Sheet or Technical Service for additional information on priming. Application Recommended application temperatures: 40°-100°F. For cold weather application condition units at approximately 70°F; remove prior to using. For best performance, Sikaflex-1a should be gunned into joint when joint slot is at mid-point of its designed expansion and contraction. Place nozzle of gun into bottom of the joint and fill entire joint. Keep the nozzle in the sealant, continue on with a steady flow of sealant preceding the nozzle to avoid air entrapment. Avoid overlapping of sealant to eliminate entrapment of air. Tool sealant to ensure full contact with joint walls and remove air entrapment. Joint dimension should allow for 1/4 inch minimum and 1/2 inch maximum thickness for sealant. Proper design is 2:1 width to depth ratio, For use in horizontal joints in traffic areas, the absolute minimum depth of the sealant is 1/2 in. and closed cell backer rod is recommended. Limitations Allow 1-week cure at standard conditions when using Sikaflex-1a in total water immersion situations and prior to painting. When overcoating with water, oil and rubber based paints, compatibility and adhesion testing is essential. Avoid exposure to high levels of chlorine. (Maximum continuous level is 5 ppm of chlorine.) Maximum depth of sealant must not exceed 1/2 in.; minimum depth is 1/4 in. Maximum expansion and contraction should not exceed 25% of average joint width. Do not cure in the presence of curing silicone sealants. Avoid contact with alcohol and other solvent cleaners during cure. Do not apply when moisture-vapor-transmission condition exists from the substrate as this can cause bubbling within the sealant. Use opened cartridges and uni-pac sausages the same day When applying sealant, avoid air-entrapment, Since system is moisture-cured, permit sufficient exposure to air. White color tends to yellow slightly when exposed to ultraviolet rays. Light colors can yellow if exposed to direct gas fired heating element. The ultimate performance of Sikaflex-1a depends on good joint design and proper application with joint surfaces properly prepared. The depth of sealant in horizontal joints subject to traffic is 1/2 in. Do not tool with detergent or soap solutions. Do not use in contact with bituminous/asphaltic materials. Caution Irritant Keep away from open flames and high heat. Contains xylene; avoid breathing vapors. Use with adequate ventilation. Combustible Avoid skin and eye contact. Use of NIOSH approved organic vapor respirator, safe and chemical-resistant gloves recommended. Remove contaminated clothing and shoes First Aid In case of skin contact, wash thoroughly with soap and water. For eye contact, flush immediately with plenty of water for at

KEEP CONTAINER TIGHTLY CLOSED . KEEP OUT OF REACH OF CHILDREN . NOT FOR INTERNAL CONSUMPTION . FOR INDUSTRIAL USE ONLY KEEP CONTAINER TIGHTLY CLOSED - KEEP OUT OF REACH OF CHILDREN - NOT FOR INTERNAL CONSUMPTION - FOR INDUSTRIAL USE ONLY
All information provided by Sika Corporation, "Sika" concerning Sika products, including but not limited to, any recommendations and advice relating to the
application and use of Sika products, is given in good faith based on Sika's current experience and knowledge of its products when properly stored, handled
and applied under normal conditions in accordance with Sika's instructions, in practice, the differences in materials, substrates, storage and handling conditions, actual site conditions and other factors outside of Sika's control are such that Sika assumes no liability for the provision of such information advice,
recommendations or instructions related to its products. The user of the Sika product(s) must test the product(s) for suitability for the intended application
and purpose before proceeding with the full application of the product(s). Sika reserves the right to change the properties of its products without notice
All sales of Sika product(s) are subject to its current terms and conditions of sale which are available at www.sikacorp.com or by calling 800-933-7452.

collect, absorb, and dispose of in accordance with current, applicable local, state, and federal regulations.

Uncured material can be removed with approved solvent. Cured material can only be removed mechanically. For spillage

Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product's most current Technical Data Sheet, product label and Materiat Safety Data Sheet which are available online at www.sikaconstruction.com or by calling Sika's Technical Service Department at 800-933-7452. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instruction for each Sika product as set forth in the current Technical Data Sheet, product label and Material Safety Data Sheet prior to product use.

LIMITED WARRANTY: Sika warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Technical Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor. NOOTHERWARRANTIESEXPRESSORIMPLIED SHALLAPPLYINGLUDINGANYWARRANTYOFMERCHANTABILITY OR FITNESS FOR APARTICULAR PURPOSE. SIKASHALLNOTBELIABLEUNDERANYLEGALTHEORYFORSPECIAL ORCONSEQUENTIAL DAMAGES. SIKASHALLNOTBERESPONSIBLE FOR THE USE OF THIS PRODUCTINA MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS. 1-800-933-SIKA NATIONWIDE

Visit our website at www.sikaconstruction.com

Regional Information and Sales Centers. For the location of your nearest Sika sales office contact your regional center.

least 15 minutes; contact physician. Wash clothing before re-use. Discard contaminated shoes.

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8.6



Clean Up

Product Data Sheet

Edition 5 11.2009 Identification no. 389-720 Sikadur Combiflex

Sikadur® Combiflex®

Unique 'strip and seal' system to seal and waterproof the unusual joint

Description	Versatile sealing system for irregular and difficult joints and cracks. Withstands extreme movements and chemical exposures while maintaining a watertight seal. The system consists of Sikadur 31 Hi-Mod Gel, epoxy adhesive, and Combiflex perforated Hypalon® sealing strip.
Where to Use	 Types of Joints: construction expansion, cracks, connecting Types of Substrates: concrete, mortar, steel, iron, aluminum, brick, wood, and other building materials Types of Structures: tunnels, pipes, storage tanks, swimming pools parking garages, sewage treatment tanks, roofs
Advantages	 Exceptional adhesion on all common building materials. Easy application. Easy repair. Economical solution. Applicable even on damp surfaces Sikadur 31, Hi-Mod Gel is moisture-tolerant. Fast-setting Sikadur 31, Hi-Mod Gel, ensures early joint use. Permanently elastic, even at low temperatures Seals large and small irregular joints, even with high movement Weather-resistant. Resists many chemicals Withstands UV light and is ozone resistant Approved for contact with potable water. Perforations along edges of Combiflex sheeting provide "rivet effect" and add mechanical bond to augment chemical bond. Contractor has advantage of always working on surface of substrate; no need to remove existing failed joint sealant No priming; no routing; no need to clean old joints.
Coverage	Hypalon Sheeting - 20 lineal ft./roll. Sikadur 31, Hi-Mod Gel - 40 lineal ft./gal. CombiflexActivator - 20 lineal ft./pt.
Packaging	Kits: Pre-measured kits containing 4 in wide by 20 ft long Hypalon sheeting, 60 oz of Sikadur 31, Hi-Mod Gel and 1 pint of Combiflex Activator.
5 5	The components may be also be purchased separately:
	Hypalon sheeting - 4, 8 and 12 in, wide by 20 ft. long and 82 ft. long.
	Sikadur 31, Hi-Mod Gel -3 gal. units, and 12 oz. units, 12/case.

Typical Data (Material and curing conditions 73°F (23°C) and 50% R.H.)

Shelf life

Combiflex Kit - 2 years in original unopened containers.

Storage Conditions

Store dry at 40°-95°F (4°-35°C.) Condition material to 65°-85°F before using.

Sikadur 31, Hi-Mod Gel, adhesive - concrete gray.

Hypalon sheeting - concrete gray.

Typical Technical Data for Sikadur 31, Hi-Mod Gel, Adhesive:

Pot Life

Approximately 30 minutes. 2-3 hours

Tack Free Time

Typical Technical Data for Hypalon Sheeting:

Tensile Properties (ASTM D-412)

Tensile Strength

1,000 psi (6 8 MPa) 800%

Elongation at Break Tensile Set After Break

Tear Resistance (ASTM D-624) Die C

Resistance to Tear 250 lb /in.

Maintained to -40°F Low Temperature of Performance

Typical Technical Data for Sikadur Combiflex System:

Peel Strength (ASTM D-903)

7 days Substrate, Concrete

No loss of adhesion between the Hypalon and the Sikadur 31. Hi-Mod Gel, or the Sikadur 31, Hi-Mod Gel, and the concrete.

12 Month Chemical Exposure

Water Treatment Process: Immersion in potable water, aerobic, and anaerobic treatment tanks. No change in performance. Combiflex unaffected

Ozone Resistance

3 month Exposure

Water/Ozone (3 ppm) - No Effect; Air/Ozone (2-300 ppm) - No Effect

For additional information on Sikadur 31 Hi-Mod Gell consult Technical Data Sheet or call Technical Service



	e Hypalon sheeting has stress applied in service sthetic product. Color may alter due to variations in lighting and/or UV exposure.
How to Use	
tance, greas Preparation free, open te	t be clean and sound. It may be dry or damp but free of standing water Remove dust. lai- e, curing compounds, impregnations, waxes, and any other contaminants. Work: Concrete - Should be cleaned and prepared to achieve a laitance and contaminant stured surface by blastcleaning or equivalent mechanical means. It is be cleaned and prepared thoroughly by blastcleaning.
nent 'A' by vo	component of Sikadur 31, Hi-Mod Gel. Proportion 1 part Component 'B' to 2 parts Compo- plume into a clean pail. Mix thoroughly for 3 minutes using a Sika paddle on a low-speed drill on) until uniform in color.
ply the mixed in. Work into the sheeting sheet. Sikad bonded toge at waterproo	n sheeting with Activator a minimum of 1 hr., and a maximum of 8 hrs. before installation. Ap-I Sikadur 31, Hi-Mod Gel, 1-1/2 in. on each side of the joint to a thickness of approximately 1/32 the substrate for positive adhesion. Set the sheeting into the epoxy. Using a hard roller, force down into the epoxy. Apply an additional 1/32 in. layer of epoxy as a top coat to the Hypalon ur 31, Hi-Mod Gel should not be applied in greater than a 1/8-in. thickness. Sheeting may be ther thermally with a hand-welding tool (i.e., Leister heat-welder or similar equipment available fing supply outlets) or by Activator Experience demonstrates that heat welding is a quicker inding two strips.
sensitization cause respir (silicosis) an Use of safety an appropria	'A' - Irritant; Sensitizer - Contains epoxy resin and crystalline silica (sand). Can cause skin after prolonged or repeated contact. Skin and eye irritant. High concentrations of vapor may atory irritation. If sanded, crystalline silica dust may be generated and may cause lung injury d is listed as a suspect carcinogen by NTP and IARC (2A). Use only with adequate ventilation or goggles and chemical resistant gloves is recommended. In case of exceedance of PELs, use te, properly fitted NIOSH approved respirator. Remove contaminated clothing. Consult MSDS ailed information.
or skin may o contact. Skir may cause li generated ar IARC (2A). A sistant glove	'B' - Corrosive; Sensitizer- Contains amines and crystalline silica (sand). Contact with eyes cause severe burns. Can cause skin and/or respiratory sensitization after prolonged or repeated and eye irritant. High concentrations of vapor may cause respiratory irritation. Overexposure ver, kidney, and/or central nervous system effects. If sanded, crystalline silica dust may be and may cause delayed lung injury (silicosis) and is listed as a suspect carcinogen by NTP and void skin contact. Use only with adequate ventilation. Use of safety goggles and chemical resis is recommended. In case of exceedance of PELs, use an appropriate, properly fitted NIOSH spirator. Remove contaminated clothing. Consult MSDS for more detailed information.
First Aid In case of sk a physician.	in contact, wash immediately and thoroughly with soap and water. If symptoms persist, consult For respiratory problems, remove person to fresh air; if symptoms persist, contact a physician taminated clothing.
Clean Up In case of sp and transfer	ills or leaks, wear suitable protective equipment, contain spill, collect with absorbent material, to suitable container. Ventilate area. Avoid contact. Dispose of in accordance with current apply, state, and federal regulations.

KEEP CONTAINER TIGHTLY CLOSED * KEEP OUT OF REACH OF CHILDREN * NOT FOR INTERNAL CONSUMPTION * FOR INDUSTRIAL USE ONLY
All information provided by Sika Corporation (*Sika") concerning Sika products, including but not limited to, any recommendations and advice relating to the
application and use of Sika products, is given in good faith based on Sika's current experience and knowledge of its products when properly stored, handled
and applied under normal conditions in accordance with Sika's instructions. In practice the differences in materials, substrates, storage and handling condi-tions, actual site conditions and other factors outside of Sika's control are such that Sika assumes no liability for the provision of such information, advice,
recommendations or instructions related to its products, or shall any legal relationship be created by or arise from the provision of such information, advice,
recommendations or instructions related to its products, or shall any legal relationship be created by or arise from the provision of such information, advice,
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and purpose before proceeding with the full application of the product(s). Sika reserves the right to change the properties of its products without notice
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LIMITED WARRANTY: Sika warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Technical Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor. NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANYWARTANTYOF MERCHANTABILITY OR FITHESS FOR APARTICULAR PURPOSE, SIKASHALLNOTBELABLE UNDERANTLEGAL THEORYFOR SPECIAL OR CONSEQUENTIAL DAMAGES, SIKASHALLNOTBERESPONSIBLE FOR THE USE OF THIS PRODUCT IN AMANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS. 1-800-933-SIKA NATIONWIDE

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Sika Canada Inc. 601 Delmar Avenue Pointe Claire Quebec H9R 4A9 Phone: 514-697-2610 Fax: 514-694-2792 Sika Mexicana S.A. de C.V. Carretera Libre Celaya Km. 8.5 Fracc, Industrial Balvanera Corregidora Queretaro C.P. 76920 Phone: 52 442 2385800 Fax: 52 442 2250537



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TABLE 4Estimate of Probable Construction Cost Option 1

Item	Description	Units	Qty.	Unit Price	Sub-Total	Total
, i	Disposal of Contaminated Materials Remove and dispose caulking Dispose deteriorated concrete	S S	-	\$5,000.00	\$5,000	\$15,000 \$5,000
4	Encapsulate PCB Contaminated Concrete 2 coats of epoxy high build coating	<u>г</u>	- 600	\$15.00	000 6\$	000'6\$
ฑ์	Settling Compartment Roof Slab Crack Repair Option 1 Epoxy crack injection 100%	تا	650	\$100.00	\$65,000	\$65,000
ø	Expansion Joint Concrete Repair Polymer modified concrete	SF	9	\$75.00	\$4,500	\$4,500 \$4,500
ထိ	Expansion Joint Seal Option 2 Hypalon sealing strip	Ľ.	247	\$40.00	\$9,880	69,880
o,	Flash Mixer Concrete Stair Replacement Concrete Remove & Replace Aluminum Handrail Remove & Replace Chainlink Fence	7 7 7	8 20 20	\$1,000.00 \$120.00 \$100.00	\$8,000 \$2,400 \$2,000	\$12,400 \$8,000 \$2,400 \$2,000
	General Conditions - 10%				SUBTOTAL	\$115,780 \$11,578
	Engineering & Contingency Allowance - 30%		CONS	CONSTRUCTION - SUBTOTAL	SUBTOTAL	\$127,358 \$38,207
					TOTAL	\$165,565 \$166,000

TABLE 4Estimate of Probable Construction Cost Option 2

Item	Description	Units	Qty.	Unit Price	Sub-Total	Total
÷	Disposal of Contaminated Materials Remove and dispose caulking Dispose deteriorated concrete	S.I.S.I.S.I.S.I.S.I.S.I.S.I.S.I.S.I.S.I	ਜਜ	\$2,500.00 \$10,000.00	\$2,500 \$10,000	\$12,500 \$2,500 \$10,000
7	Encapsulate PCB Contaminated Concrete 2 coats of epoxy high build coating	S	009	\$12.00	\$7,200	\$7,200 \$7,200
พ้	Settling Compartment Roof Slab Crack Repair Option 1 epoxy crack injection 100%	ion 1 LF	650	\$100,00	\$65,000	\$65,000 \$65,000
9.	Expansion Joint Concrete Repair Polymer modified concrete	SF	9	\$75.00	\$4,500	\$4,500 \$4,500
ζ.	Expansion Joint Seal Option 1 Polyurethane elastomeric sealant	占	247	\$10.00	\$2,470	\$2,470 \$2,470
6	Flash Mixer Concrete Stair Replacement Concrete Remove & Replace Aluminum Handrail Remove & Replace Chainlink Fence	CUYD LF LF	8 20 20	\$1,000.00 \$120.00 \$100.00	\$8,000 \$2,400 \$2,000	\$12,400 \$8,000 \$2,400 \$2,000
	General Conditions - 10%			v	SUBTOTAL	\$104,070 \$10,407
	Engineering & Contingency Allowance - 30%	J	CONSTI	CONSTRUCTION - SUBTOTAL	- UBTOTAL	\$114,477 \$34,343
					TOTAL SAY	\$148,820 \$149,000

TABLE 4Estimate of Probable Construction Cost Option 3

Item	n Description	Units	Otv.	Unit Price	Sub-Total	Total
ri	Disposal of Contaminated Materials Remove and dispose caulking	<u>S</u>	•	\$2 500 00	\$ 7 F	\$12,500
	Dispose deteriorated concrete	SI	1 ↔	\$10,000.00	\$10,000	\$2,300 \$10,000
2	Encapsulate PCB Contaminated Concrete 2 coats of epoxy high build coating	SF	909	\$12.00	\$7,200	\$7,200 \$7,200
4.	Settling Compartment Roof Slab Crack Repair Option 2 epoxy crack injection (partial only) Epoxy overlay	F. SF	60 3829	\$100.00 \$7.00	\$6,000 \$26,800	\$32,800 \$6,000 \$26,800
ġ.	Expansion Joint Concrete Repair Polymer modified concrete	SF	09	\$75.00	\$4,500	\$4,500 \$4,500
œ	Expansion Join Seal Option 2 Hypalon sealing strip	님	247	\$40.00	088′6\$	088'6\$
6	Flash Mixer Concrete Stair Replacement Concrete Remove & Replace Aluminum Handrail Remove & Replace Chainlink Fence	CUYD F	8 20 20	\$1,000.00 \$120.00 \$100.00	\$8,000 \$2,400 \$2,000	\$12,400 \$8,000 \$2,400 \$2,000
	Jonetin Joneth Jones				SUBTOTAL	\$79,280
	General Conditions - 1.0% Engineering & Contingency Allowance - 30%		CONS	CONSTRUCTION - SUBTOTAL	SUBTOTAL	\$7,928 \$87,207 \$26,162
					TOTAL	\$113,370 \$113,000

TABLE 4Estimate of Probable Construction Cost Option 4

Item	Description	Units	Qty.	Unit Price	Sub-Totai	Total
,	Disposal of Contaminated Materials Remove and dispose caulking Dispose deteriorated concrete	S S	ਜ ਜ	\$2,500.00 \$10,000.00	\$2,500 \$10,000	\$12,500 \$2,500 \$10,000
7	Encapsulate PCB Contaminated Concrete 2 coats of epoxy high build coating	SF	900	\$12.00	\$7,200	\$7,200 \$7,200
4	Settling Compartment Roof Slab Crack Repair Option 2 epoxy crack injection (partial only) Epoxy overlay	S.F	60 3829	\$100.00 \$7.00	\$6,000	\$32,800 \$6,000 \$26,800
છં	Expansion Joint Concrete Repair Polymer modified concrete	SF	9	\$75.00	\$4,500	\$4,500 \$4,500
۲.	Expansion Joint Seal Option 1 Polyurethane elastomeric sealant	ഥ	247	\$10.00	\$2,470	\$2,470 \$2,470
oi	Flash Mixer Concrete Stair Replacement Concrete Remove & Replace Aluminum Handrail Remove & Replace Chainlink Fence	CUYD LF LF	8 20 20	\$1,000.00 \$120.00 \$100.00	\$8,000 \$2,400 \$2,000	\$12,400 \$8,000 \$2,400 \$2,000
	General Conditions - 10%				SUBTOTAL -	\$71,870 \$7,187
	Engineering & Contingency Allowance - 30%		CONS	CONSTRUCTION - SUBTOTAL	SUBTOTAL	\$79,056 \$23,717
					TOTAL	\$102,773 \$103,000

TABLE 4Estimate of Probable Construction CostOption 5

Item	Description	Units	Otv.	Unit Price	Sub-Total	Total
ᆏ	Disposal of Contaminated Materials					\$12,500
	Remove and dispose caulking	FS	H	\$2,500.00	\$2,500	\$2,500
	Dispose deteriorated concrete	LS	⊣	\$10,000.00	\$10,000	\$10,000
2.	Encapsulate PCB Contaminated Concrete					\$7,200
	2 coats of epoxy high build coating	SF	009	\$12.00	\$7,200	\$7,200
Ŋ,	Settling Compartment Roof Slab Crack Repair Option 2					\$25,143
	epoxy crack injection (partial only)	当	09	\$100.00	\$6,000	\$6,000
	Cementitious Overlay	SF	3829	\$5.00	\$19,143	\$19,143
9	Expansion Joint Concrete Repair					\$4,500
	Polymer modified concrete	SF	90	\$75.00	\$4,500	\$4,500
œ	Expansion Join Seal Option 2					\$9,880
	Hypalon sealing strip	占	247	\$40.00	088′6\$	\$9,880
6	Flash Mixer Concrete Stair Replacement					\$12,400
	Concrete.	CUYD	∞	\$1,000.00	\$8,000	\$8,000
	Remove & Replace Aluminum Handrail	느	20	\$120.00	\$2,400	\$2,400
	Remove & Replace Chainlink Fence	<u>"</u>	20	\$100.00	\$2,000	\$2,000
					SUBTOTAL	\$71,623
	General Conditions - 10%				Í	\$7,162
	Engineering & Contingency Allowance - 30%		CONS	CONSTRUCTION - SUBTOTAL	SUBTOTAL	\$78,785 \$23,635
					TOTAL SAY	\$102,420 \$102,000

TABLE 4Estimate of Probable Construction Cost Option 6

Item	Description	Units	Qty.	Unit Price	Sub-Total	Total
i	Disposal of Contaminated Materials Remove and dispose caulking Dispose deteriorated concrete	LS LS	ਜ ਜ	\$2,500.00 \$10,000.00	\$2,500 \$10,000	\$12,500 \$2,500 \$10,000
'n	Encapsulate PCB Contaminated Concrete 2 coats of epoxy high build coating	SF	909	\$12.00	\$7,200	\$7,200 \$7,200
ហ	Settling Compartment Roof Slab Crack Repair Option 2 epoxy crack injection (partial only) Cementitious overlay	LF SF	60 3829	\$100.00 \$5.00	\$6,000 \$19,143	\$25,143 \$6,000 \$19,143
9	Expansion Joint Concrete Repair Polymer modified concrete	R	09	\$75.00	\$4,500	\$4,500 \$4,500
7.	Expansion Joint Seal Option 1 Polyurethane elastomeric sealant	느	247	\$10.00	\$2,470	\$2,470 \$2,470
6	Flash Mixer Concrete Stair Replacement Concrete Remove & Replace Aluminum Handrail Remove & Replace Chainlink Fence	CUYD LF LF	8 20 20	\$1,000.00 \$120.00 \$100.00	\$8,000 \$2,400 \$2,000	\$12,400 \$8,000 \$2,400 \$2,000
	General Conditions - 10%				SUBTOTAL —	\$64,213 \$6,421
	Engineering & Contingency Allowance - 30%		CONS	CONSTRUCTION - SUBTOTAL	SUBTOTAL	\$70,634 \$21,190
					TOTAL	\$91,824 \$92,000

TABLE 4Estimate of Probable Construction Cost All Options

Item	l Description	Units	Qty.	Unit Price	Sub-Total	Total
÷	Disposal of Contaminated Materials Remove and dispose caulking Dispose deteriorated concrete	S. L.S	ਜ਼ ਜ	\$5,000.00 \$10,000.00	\$5,000	\$15,000 \$5,000 \$10,000
2.	Encapsulate PCB Contaminated Concrete 2 coats of epoxy high build coating	SF	009	\$15.00	000'6\$	000'6\$
က်	Settling Compartment Roof Slab Crack Repair Option 1 Epoxy crack injection 100%	ഥ	650	\$100.00	\$65,000	\$65,000 \$65,000
4	Settling Compartment Roof Slab Crack Repair Option 2 epoxy crack injection (partial only) Epoxy. overlay	귀 K	60 3829	\$100.00 \$7.00	\$6,000 \$26,800	\$32,800 \$6,000 \$26,800
ហំ	Settling Compartment Roof Slab Crack Repair Option 3 Epoxy crack injection (partial only) Cementitious overlay	다 SF	60 3829	\$100.00 \$6.00	\$6,000 \$22,971	\$28,971 \$6,000 \$22,971
Ģ.	Expansion Joint Concrete Repair Polymer modified concrete	SF	09	\$75.00	\$4,500	\$4,500 \$4,500
7.	Expansion Joint Seal Option 1 Polyurethane elastomeric sealant	片	247	\$10.00	\$2,470	\$2,470 \$2,470
œံ	Expansion Join Seal Option 2 Hypalon sealing strip	۲	247	\$40.00	088′6\$	\$9,880
ó	Flash Mixer Concrete Stair Replacement Concrete Remove & Replace Aluminum Handrail Remove & Replace Chainlink Fence	CUYD LF LF	8 20 20	\$1,000.00 \$120.00 \$100.00	\$8,000 \$2,400 \$2,000	\$12,400 \$8,000 \$2,400 \$2,000

APPENDIX D

LABORATORY ANALYTICAL REPORTS



ANALYTICAL REPORT

Lab Number: L1001173

Client: GZA GeoEnvironmental, Inc.

1 Edgewater Drive Norwood, MA 02062

ATTN: Dave Leone

Project Name: CT MDC
Project Number: 19395.50
Report Date: 02/01/10

Certifications & Approvals: MA (M-MA086), NY NELAC (11148), CT (PH-0574), NH (2003), NJ (MA935), RI (LAO00065), ME (MA0086), PA (Registration #68-03671), USDA (Permit #S-72578), US Army Corps of Engineers, Naval FESC.

Eight Walkup Drive, Westborough, MA 01581-1019 508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1001173-01	CD-EXP #1, (1") 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001173-02	CD-EXP #1, (1") 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001173-03	CD-EXP #1, (3") 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001173-04	CD-EXP #1, (3") 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001173-05	CD-EXP #1, (6") 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001173-06	CD-EXP #1, (6") 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001173-07	CD-EXP #1, (12") 0"-1/4"	RESERVOIR #6	01/21/10 00:00
L1001173-08	CD-EXP #2, (1") 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001173-09	CD-EXP #2, (1") 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001173-10	CD-EXP #2, (3") 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001173-11	CD-EXP #2, (3") 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001173-12	CD-EXP #2, (6") 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001173-13	CD-EXP #2, (6") 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001173-14	CD-EXP #2, (12") 0"-1/4"	RESERVOIR #6	01/21/10 00:00
L1001173-15	CD-EXP #3, (1") 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001173-16	CD-EXP #3, (1") 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001173-17	CD-EXP #3, (3") 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001173-18	CD-EXP #3, (3") 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001173-19	CD-EXP #3, (6") 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001173-20	CD-EXP #3, (6") 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001173-21	CD-EXP #3, (12") 0"-1/4"	RESERVOIR #6	01/21/10 00:00
L1001173-22	CD-DW2, (1") 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001173-23	CD-DW2, (1") 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001173-24	CD-DW2, (3") 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001173-25	CD-DW2, (3") 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001173-26	CD-DW2, (6") 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001173-27	CD-DW2, (6") 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001173-28	CD-DW2, (12") 0"-1/4"	RESERVOIR #6	01/21/10 00:00
L1001173-29	EQUIP BLANK #1	RESERVOIR #6	01/21/10 00:00
L1001173-30	EQUIP BLANK #2	RESERVOIR #6	01/21/10 00000
Page 2 of 48 173-31	EQUIP BLANK #3	RESERVOIR #6	01/21/10 00:00

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1001173-32	EXPANSION JOINT #2	RESERVOIR #6	01/21/10 00:00
L1001173-33	EXPANSION JOINT #3	RESERVOIR #6	01/21/10 00:00
L1001173-34	BULKHEAD #2	RESERVOIR #6	01/21/10 00:00
L1001173-35	DRY WELL #2	RESERVOIR #6	01/21/10 00:00
L1001173-36	EAST OF FLOCC. TANK #4	RESERVOIR #6	01/21/10 00:00
L1001173-37	BUS LINE BY ELECTRIC SHED	RESERVOIR #6	01/21/10 00:00
L1001173-38	FLOCC TANK #2	RESERVOIR #6	01/21/10 00:00



Project Name:CT MDCLab Number:L1001173Project Number:19395.50Report Date:02/01/10

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

PCB

L1001173-01, -08, -15, -22 and the associated QC have elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

L1001173-01 has elevated detection limits due to the dilution required by matrix interferences encountered during the concentration of the sample.

L1001173-08 and -22 have elevated detection limits due to the dilutions required by the matrix interferences encountered during the concentration of the samples and the analytical dilution required by the elevated concentrations of target compounds in the samples.

L1001173-15, -32, -33, -35, -36 and -38 have elevated detection limits due to the dilutions required by the



Project Name:CT MDCLab Number:L1001173Project Number:19395.50Report Date:02/01/10

Case Narrative (continued)

elevated concentrations of target compounds in the samples.

L1001173-34 has elevated detection limits due to the dilution required by the sample matrix.

L1001173-34 contains peaks which fall within the retention times for Aroclor 1268, but do not match the retention times typical for this Aroclor.

The surrogate recovery for L1001173-01 is outside the individual acceptance criteria for Decachlorobiphenyl (23%), but within the overall method allowances. The results of the original analysis are reported.

The surrogate recoveries for L1001173-08, -15, -22, -32, -33, -35, -36 and -38 are below the acceptance criteria for 2,4,5,6-Tetrachloro-m-xylene and Decachlorobiphenyl (All 0%) due to the dilutions required to quantitate the samples. Re-extraction is not required; therefore, the results of the original analysis are reported.

The surrogate recoveries for L1001173-34 are outside the acceptance criteria for Decachlorobiphenyl (200%/181%); however, the sample was not re-extracted due to coelution with obvious interferences. A copy of the chromatogram is included as an attachment to this report.

L1001173-37: The internal standard (IS) response for 1-Bromo 2-Nitrobenzene and the surrogate recoveries for 2,4,5,6-Tetrachloro-m-xylene (14%) and Decachlorobiphenyl (15%) are outside the acceptance criteria; however, the sample was not re-extracted due to coelution with obvious interferences. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Title: Technical Director/Representative

ALPHA

Date: 02/01/10

ORGANICS



PCBS



Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

Lab ID: L1001173-01 Date Collected: 01/21/10 00:00

Client ID: CD-EXP #1, (1") 1/8"-1/2" Date Received: 01/22/10

Sample Location: RESERVOIR #6 Field Prep: Not Specified Matrix: Solid Extraction Method: EPA 3540C

Analytical Method: 1,8082 Extraction Date: 01/26/10 23:00
Analytical Date: 01/29/10 18:33 Cleanup Method1: EPA 3665A

Analyst: SH Cleanup Date1: 01/28/10
Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

Cleanup Date2: 01/28/10

Parameter Result Qualifier Units RDL **Dilution Factor** PCB by GC - Westborough Lab Aroclor 1254 607 ug/kg 118 2 Aroclor 1262 499 39.5 2 ug/kg

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	31		30-150	A
Decachlorobiphenyl	23	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	33		30-150	В
Decachlorobiphenyl	31		30-150	В



Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

Lab ID: Date Collected: 01/21/10 00:00

Client ID: CD-EXP #1, (1") 1/8"-1/2" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Solid Extraction Method: EPA 3540C
Analytical Method: 1,8082 Extraction Date: 01/26/10 23:00

Analytical Date: 01/29/10 18:33 Cleanup Method1: EPA 3665A

Analyst: SH Cleanup Date1: 01/28/10
Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

Cleanup Date2: 01/28/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug/kg	118	2
Aroclor 1221	ND		ug/kg	118	2
Aroclor 1232	ND		ug/kg	118	2
Aroclor 1242	ND		ug/kg	118	2
Aroclor 1248	ND		ug/kg	79.0	2
Aroclor 1260	ND		ug/kg	79.0	2
Aroclor 1268	ND		ug/kg	39.5	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	31		30-150	А
Decachlorobiphenyl	23	Q	30-150	А
2,4,5,6-Tetrachloro-m-xylene	33		30-150	В
Decachlorobiphenyl	31		30-150	В



Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

Lab ID: Date Collected: 01/21/10 00:00

Client ID: CD-EXP #2, (1") 1/8"-1/2" Date Received: 01/22/10

Sample Location:RESERVOIR #6Field Prep:Not SpecifiedMatrix:SolidExtraction Method:EPA 3540CAnalytical Method:1,8082Extraction Date:01/26/10 23:00

Analytical Date: 01/29/10 18:45 Cleanup Method1: EPA 3665A Analyst: SH Cleanup Date1: 01/28/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

Cleanup Date2: 01/28/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1254	ND		ug/kg	1240	20
Aroclor 1262	11000		ug/kg	414	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	Α
Decachlorobiphenyl	0	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В
Decachlorobiphenyl	0	Q	30-150	В



Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 Report Date: 02/01/10

SAMPLE RESULTS

Lab ID: Date Collected: 01/21/10 00:00

Client ID: CD-EXP #2, (1") 1/8"-1/2" Date Received: 01/22/10

Sample Location:RESERVOIR #6Field Prep:Not SpecifiedMatrix:SolidExtraction Method:EPA 3540CAnalytical Method:1,8082Extraction Date:01/26/10 23:00

Analytical Date: 01/29/10 18:45 Cleanup Method1: EPA 3665A
Analyst: SH Cleanup Date1: 01/28/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 01/28/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug/kg	1240	20
Aroclor 1221	ND		ug/kg	1240	20
Aroclor 1232	ND		ug/kg	1240	20
Aroclor 1242	ND		ug/kg	1240	20
Aroclor 1248	ND		ug/kg	828	20
Aroclor 1260	ND		ug/kg	828	20
Aroclor 1268	ND		ug/kg	414	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	А
Decachlorobiphenyl	0	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В
Decachlorobiphenyl	0	Q	30-150	В



Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

Lab ID: L1001173-15 Date Collected: 01/21/10 00:00

Client ID: CD-EXP #3, (1") 1/8"-1/2" Date Received: 01/22/10

Sample Location:RESERVOIR #6Field Prep:Not SpecifiedMatrix:SolidExtraction Method:EPA 3540CAnalytical Method:1,8082Extraction Date:01/26/10 23:00

Analytical Date: 02/01/10 13:29 Cleanup Method1: EPA 3665A
Analyst: SH Cleanup Date1: 01/28/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

Cleanup Date2: 01/28/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1262	5240000		ug/kg	228000	10000

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	A
Decachlorobiphenyl	0	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В
Decachlorobiphenyl	0	Q	30-150	В



Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

Lab ID: L1001173-15 Date Collected: 01/21/10 00:00

Client ID: CD-EXP #3, (1") 1/8"-1/2" Date Received: 01/22/10

Sample Location:RESERVOIR #6Field Prep:Not SpecifiedMatrix:SolidExtraction Method:EPA 3540CAnalytical Method:1,8082Extraction Date:01/26/10 23:00

Analytical Nethod: 1,8082 Extraction Date: 01/26/10 23:00
Analytical Date: 02/01/10 13:29 Cleanup Method1: EPA 3665A
Analyst: SH Cleanup Date1: 01/28/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 01/28/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug/kg	685000	10000
Aroclor 1221	ND		ug/kg	685000	10000
Aroclor 1232	ND		ug/kg	685000	10000
Aroclor 1242	ND		ug/kg	685000	10000
Aroclor 1248	ND		ug/kg	457000	10000
Aroclor 1254	ND		ug/kg	685000	10000
Aroclor 1260	ND		ug/kg	457000	10000
Aroclor 1268	ND		ug/kg	228000	10000

	Acceptance				
Surrogate	% Recovery	Qualifier	Criteria	Column	
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	А	
Decachlorobiphenyl	0	Q	30-150	А	
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В	
Decachlorobiphenyl	0	Q	30-150	В	



EPA 3540C

Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

Lab ID: Date Collected: 01/21/10 00:00

Client ID: CD-DW2, (1") 1/8"-1/2" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Solid Extraction Method:
Analytical Method: 1,8082 Extraction Date:

 Analytical Method:
 1,8082
 Extraction Date:
 01/26/10 23:00

 Analytical Date:
 01/29/10 19:22
 Cleanup Method1:
 EPA 3665A

 Analyst:
 SH
 Cleanup Date1:
 01/28/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

Cleanup Date2: 01/28/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1260	32200		ug/kg	1330	20

	Acceptance					
Surrogate	% Recovery	Qualifier	Criteria	Column		
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	A		
Decachlorobiphenyl	0	Q	30-150	Α		
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В		
Decachlorobiphenyl	0	Q	30-150	В		

Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

Lab ID: L1001173-22 Date Collected: 01/21/10 00:00

Client ID: CD-DW2, (1") 1/8"-1/2" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Solid Extraction Method: EPA 3540C

Analytical Method: 1,8082 Extraction Date: 01/26/10 23:00

Analytical Date: 01/29/10 19:22 Cleanup Method1: EPA 3665A
Analyst: SH Cleanup Date1: 01/28/10
Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

ercent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660 Cleanup Date2: 01/28/10

Parameter Result Qualifier Units RDL **Dilution Factor** PCB by GC - Westborough Lab Aroclor 1016 ND 2000 20 ug/kg Aroclor 1221 ND 2000 20 ug/kg Aroclor 1232 ND 2000 20 ug/kg Aroclor 1242 ND 2000 20 ug/kg Aroclor 1248 ND 1330 20 ug/kg Aroclor 1254 ND 2000 20 ug/kg Aroclor 1262 ND ug/kg 667 20 Aroclor 1268 ND 20 ug/kg 667

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	A
Decachlorobiphenyl	0	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В
Decachlorobiphenyl	0	Q	30-150	В



01/21/10 00:00

Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

Lab ID: L1001173-29
Client ID: EQUIP BLANK #1

Sample Location: RESERVOIR #6

Matrix: Wipe Analytical Method: 1,8082

Analytical Date: 01/28/10 21:56

Analyst: SH

Date Received: 01/22/10 Field Prep: Not Specified Extraction Method: EPA 3540C Extraction Date: 01/26/10 23:00 Cleanup Method1: EPA 3665A Cleanup Date1: 01/28/10 Cleanup Method2: EPA 3660B Cleanup Date2: 01/28/10

Date Collected:

PCB by GC - Westborough Lab Aroclor 1016 ND ug Abs 0.500 Aroclor 1221 ND ug Abs 0.500 Aroclor 1232 ND ug Abs 0.500 Aroclor 1242 ND ug Abs 0.500 Aroclor 1248 ND ug Abs 0.500 Aroclor 1254 ND ug Abs 0.500 Aroclor 1260 ND ug Abs 0.500 Aroclor 1262 ND ug Abs 0.500		Result	Qualifier	Units	RDL	Dilution Facto
Aroclor 1221 ND ug Abs 0.500 Aroclor 1232 ND ug Abs 0.500 Aroclor 1242 ND ug Abs 0.500 Aroclor 1248 ND ug Abs 0.500 Aroclor 1254 ND ug Abs 0.500 Aroclor 1260 ND ug Abs 0.500	estborough Lab					
Aroclor 1221 ND ug Abs 0.500 Aroclor 1232 ND ug Abs 0.500 Aroclor 1242 ND ug Abs 0.500 Aroclor 1248 ND ug Abs 0.500 Aroclor 1254 ND ug Abs 0.500 Aroclor 1260 ND ug Abs 0.500		ND		۸	0.500	
Aroclor 1232 ND ug Abs 0.500 Aroclor 1242 ND ug Abs 0.500 Aroclor 1248 ND ug Abs 0.500 Aroclor 1254 ND ug Abs 0.500 Aroclor 1260 ND ug Abs 0.500		טא		ug Abs	0.500	1
Aroclor 1242 ND ug Abs 0.500 Aroclor 1248 ND ug Abs 0.500 Aroclor 1254 ND ug Abs 0.500 Aroclor 1260 ND ug Abs 0.500		ND		ug Abs	0.500	1
Aroclor 1248 ND ug Abs 0.500 Aroclor 1254 ND ug Abs 0.500 Aroclor 1260 ND ug Abs 0.500		ND		ug Abs	0.500	1
Aroclor 1254 ND ug Abs 0.500 Aroclor 1260 ND ug Abs 0.500		ND		ug Abs	0.500	1
Aroclor 1260 ND ug Abs 0.500		ND		ug Abs	0.500	1
		ND		ug Abs	0.500	1
Aroclor 1262 ND ug Abs 0.500		ND		ug Abs	0.500	1
		ND		ug Abs	0.500	1
Aroclor 1268 ND ug Abs 0.500		ND		ug Abs	0.500	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	102		30-150	Α
Decachlorobiphenyl	136		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	106		30-150	В
Decachlorobiphenyl	128		30-150	В



Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

 Lab ID:
 L1001173-30
 Date Collected:
 01/21/10 00:00

 Client ID:
 EQUIP BLANK #2
 Date Received:
 01/22/10

Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Wipe Extraction Method: EPA 3540C
Analytical Method: 1,8082 Extraction Date: 01/26/10 23:00
Analytical Date: 01/28/10 22:08 Cleanup Method1: EPA 3665A

 Analytical Date:
 01/28/10 22:08
 Cleanup Method1:
 EPA 3665A

 Analyst:
 SH
 Cleanup Date1:
 01/28/10

 Cleanup Method2:
 EPA 3660B

 Cleanup Date2:
 01/28/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug Abs	0.500	1
Aroclor 1221	ND		ug Abs	0.500	1
Aroclor 1232	ND		ug Abs	0.500	
Aroclor 1242	ND		ug Abs	0.500	<u>.</u> 1
Aroclor 1248	ND		ug Abs	0.500	1
Aroclor 1254	ND		ug Abs	0.500	1
Aroclor 1260	ND		ug Abs	0.500	1
Aroclor 1262	ND		ug Abs	0.500	1
Aroclor 1268	ND		ug Abs	0.500	1

			Acceptance	
Surrogate	% Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	106		30-150	A
Decachlorobiphenyl	133		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	112		30-150	В
Decachlorobiphenyl	100		30-150	В



Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

Lab ID: L1001173-31
Client ID: EQUIP BLANK #3
Sample Location: RESERVOIR #6

Matrix: Wipe Analytical Method: 1,8082

Analytical Date: 01/29/10 19:35

Analyst: SH

Date Collected: 01/21/10 00:00 Date Received: 01/22/10 Field Prep: Not Specified Extraction Method: EPA 3540C Extraction Date: 01/26/10 23:00 Cleanup Method1: EPA 3665A Cleanup Date1: 01/28/10 Cleanup Method2: EPA 3660B Cleanup Date2: 01/28/10

Result	Qualifier	Units	RDL	Dilution Facto
ND		ua Abs	0.500	1
ND		ug Abs	0.500	1
ND		ug Abs	0.500	1
ND		ug Abs	0.500	1
ND		ug Abs	0.500	1
ND		ug Abs	0.500	1
ND		ug Abs	0.500	1
0.508		ug Abs	0.500	1
ND		ug Abs	0.500	1
	ND	ND N	ND ug Abs	ND ug Abs 0.500 0.508 ug Abs 0.500

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	128		30-150	Α
Decachlorobiphenyl	121		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	101		30-150	В
Decachlorobiphenyl	101		30-150	В



Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

Lab ID: L1001173-32 Date Collected: 01/21/10 00:00

Client ID: EXPANSION JOINT #2 Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Solid Extraction Method: EPA 3580A
Analytical Method: 1,8082 Extraction Date: 01/26/10 10:02

Analytical Date: 01/29/10 17:39 Cleanup Method1: EPA 3665A Cleanup Date1: 01/26/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 01/26/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug/kg	300000	100
Aroclor 1221	ND		ug/kg	300000	100
Aroclor 1232	ND		ug/kg	300000	100
Aroclor 1242	ND		ug/kg	300000	100
Aroclor 1248	ND		ug/kg	200000	100
Aroclor 1254	4010000		ug/kg	300000	100
Aroclor 1260	ND		ug/kg	200000	100
Aroclor 1262	8540000		ug/kg	100000	100
Aroclor 1268	ND		ug/kg	100000	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	A
Decachlorobiphenyl	0	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В
Decachlorobiphenyl	0	Q	30-150	В



Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

Lab ID: L1001173-33 Date Collected: 01/21/10 00:00

Client ID: EXPANSION JOINT #3 Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Solid Extraction Method: EPA 3580A
Analytical Method: 1,8082 Extraction Date: 01/26/10 10:02

Analytical Date: 02/01/10 15:51 Cleanup Method1: EPA 3665A Analyst: SH Cleanup Date1: 01/26/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 01/26/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug/kg	3030000	1000
Aroclor 1221	ND		ug/kg	3030000	1000
Aroclor 1232	ND		ug/kg	3030000	1000
Aroclor 1242	ND		ug/kg	3030000	1000
Aroclor 1248	ND		ug/kg	2020000	1000
Aroclor 1254	ND		ug/kg	3030000	1000
Aroclor 1260	ND		ug/kg	2020000	1000
Aroclor 1262	14000000		ug/kg	1010000	1000
Aroclor 1268	ND		ug/kg	1010000	1000

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	A
Decachlorobiphenyl	0	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В
Decachlorobiphenyl	0	Q	30-150	В



Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

Lab ID: L1001173-34 Date Collected: 01/21/10 00:00

Client ID: BULKHEAD #2 Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Solid Extraction Method: EPA 3580A
Analytical Method: 1,8082 Extraction Date: 01/26/10 10:02

Analytical Date: 01/29/10 18:04 Cleanup Method1: EPA 3665A
Analyst: SH Cleanup Date1: 01/26/10
Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

ercent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

Cleanup Date2: 01/26/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ua/ka	14600	5
			ug/kg		
Aroclor 1221	ND		ug/kg	14600	5
Aroclor 1232	ND		ug/kg	14600	5
Aroclor 1242	ND		ug/kg	14600	5
Aroclor 1248	ND		ug/kg	9710	5
Aroclor 1254	ND		ug/kg	14600	5
Aroclor 1260	ND		ug/kg	9710	5
Aroclor 1262	ND		ug/kg	4850	5
Aroclor 1268	ND		ug/kg	4850	5

	a. 5	0 ""	Acceptance Criteria	Calumn
Surrogate	% Recovery	Qualifier	Oriteria	Column
2,4,5,6-Tetrachloro-m-xylene	112		30-150	Α
Decachlorobiphenyl	200	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	112		30-150	В
Decachlorobiphenyl	181	Q	30-150	В



Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

Lab ID: L1001173-35 Date Collected: 01/21/10 00:00

Client ID: DRY WELL #2 Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Solid Extraction Method: EPA 3580A
Analytical Method: 1,8082 Extraction Date: 01/26/10 10:02

Analytical Date: 01/29/10 18:53 Cleanup Method1: EPA 3665A
Analyst: SH Cleanup Date1: 01/26/10
Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

ercent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 01/26/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
A	ND			004000	100
Aroclor 1016	ND		ug/kg	291000	100
Aroclor 1221	ND		ug/kg	291000	100
Aroclor 1232	ND		ug/kg	291000	100
Aroclor 1242	ND		ug/kg	291000	100
Aroclor 1248	ND		ug/kg	194000	100
Aroclor 1254	ND		ug/kg	291000	100
Aroclor 1260	ND		ug/kg	194000	100
Aroclor 1262	3240000		ug/kg	97100	100
Aroclor 1268	ND		ug/kg	97100	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	A
Decachlorobiphenyl	0	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В
Decachlorobiphenyl	0	Q	30-150	В



Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

Lab ID: L1001173-36 Date Collected: 01/21/10 00:00

Client ID: EAST OF FLOCC. TANK #4 Date Received: 01/22/10

Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix:SolidExtraction Method:EPA 3580AAnalytical Method:1,8082Extraction Date:01/26/10 10:02

Analytical Date: 01/29/10 19:05 Cleanup Method1: EPA 3665A
Analyst: SH Cleanup Date1: 01/26/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 01/26/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1254	6280000		ug/kg	297000	100
Aroclor 1262	6720000		ug/kg	99000	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	Α
Decachlorobiphenyl	0	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В
Decachlorobiphenyl	0	Q	30-150	В



01/26/10 10:02

Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 Report Date: 02/01/10

SAMPLE RESULTS

Lab ID: L1001173-36 Date Collected: 01/21/10 00:00

Client ID: EAST OF FLOCC. TANK #4 Date Received: 01/22/10

Sample Location: RESERVOIR #6 Field Prep: Not Specified Matrix: Solid Extraction Method: EPA 3580A

Matrix: Solid Extraction Method: Analytical Method: 1,8082 Extraction Date:

Analytical Date: 01/29/10 19:05 Cleanup Method1: EPA 3665A Analyst: SH Cleanup Date1: 01/26/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 01/26/10

Parameter Result Qualifier Units RDL **Dilution Factor** PCB by GC - Westborough Lab Aroclor 1016 ND ug/kg 297000 100 Aroclor 1221 ND 297000 100 ug/kg Aroclor 1232 ND 297000 100 ug/kg Aroclor 1242 ND ug/kg 297000 100 Aroclor 1248 ND 198000 100 ug/kg Aroclor 1260 ND 198000 100 ug/kg ND Aroclor 1268 ug/kg 99000 100

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	Α
Decachlorobiphenyl	0	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В
Decachlorobiphenyl	0	Q	30-150	В



Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

Lab ID: L1001173-37 Date Collected: 01/21/10 00:00

Client ID: BUS LINE BY ELECTRIC SHED Date Received: 01/22/10

Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Solid Extraction Method: EPA 3580A
Analytical Method: 1,8082 Extraction Date: 01/26/10 10:02

Analytical Date: 01/29/10 18:16 Cleanup Method1: EPA 3665A Analyst: SH Cleanup Date1: 01/26/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 01/26/10

Parameter Result Qualifier Units RDL **Dilution Factor** PCB by GC - Westborough Lab Aroclor 1254 22200 ug/kg 2880 1 Aroclor 1262 34300 962 1 ug/kg

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	14	Q	30-150	А
Decachlorobiphenyl	15	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	125		30-150	В
Decachlorobiphenyl	78		30-150	В

EPA 3580A

EPA 3665A

01/26/10

01/26/10 10:02

Project Name: Lab Number: CT MDC L1001173

Project Number: 19395.50

Report Date: 02/01/10

SAMPLE RESULTS

Lab ID: Date Collected: L1001173-37 01/21/10 00:00

Client ID: BUS LINE BY ELECTRIC SHED Date Received: 01/22/10 Field Prep: Not Specified

Sample Location: RESERVOIR #6

Matrix: Solid Analytical Method: 1,8082

Analytical Date: 01/29/10 18:16

Analyst: SH

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 01/26/10

Extraction Method:

Cleanup Method1:

Extraction Date:

Cleanup Date1:

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug/kg	2880	1
Aroclor 1221	ND		ug/kg	2880	1
Aroclor 1232	ND		ug/kg	2880	1
Aroclor 1242	ND		ug/kg	2880	1
Aroclor 1248	ND		ug/kg	1920	1
Aroclor 1260	ND		ug/kg	1920	1
Aroclor 1268	ND		ug/kg	962	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	14	Q	30-150	A
Decachlorobiphenyl	15	Q	30-150	А
2,4,5,6-Tetrachloro-m-xylene	125		30-150	В
Decachlorobiphenyl	78		30-150	В



Project Name: CT MDC Lab Number: L1001173

Project Number: 19395.50 **Report Date:** 02/01/10

SAMPLE RESULTS

Lab ID: L1001173-38 Date Collected: 01/21/10 00:00

Client ID: FLOCC TANK #2 Date Received: 01/22/10 Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Solid Extraction Method: EPA 3580A
Analytical Method: 1,8082 Extraction Date: 01/26/10 10:02

Analytical Method: 1,0002

Analytical Date: 02/01/10 16:03

Analyst: Cleanup Method1: EPA 3665A

Cleanup Date1: 01/26/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

ercent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660I Cleanup Date2: 01/26/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
A 1 4040	ND		,,	000000	4000
Aroclor 1016	ND		ug/kg	3000000	1000
Aroclor 1221	ND		ug/kg	3000000	1000
Aroclor 1232	ND		ug/kg	3000000	1000
Aroclor 1242	ND		ug/kg	3000000	1000
Aroclor 1248	ND		ug/kg	2000000	1000
Aroclor 1254	8750000		ug/kg	3000000	1000
Aroclor 1260	ND		ug/kg	2000000	1000
Aroclor 1262	11100000		ug/kg	1000000	1000
Aroclor 1268	ND		ug/kg	1000000	1000

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	A
Decachlorobiphenyl	0	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В
Decachlorobiphenyl	0	Q	30-150	В



Method Blank Analysis Batch Quality Control

Analytical Method: 1,8082

Analytical Date: 01/26/10 21:50

Analyst: SH

Extraction Method: EPA 3580A
Extraction Date: 01/26/10 10:02
Cleanup Method1: EPA 3665A
Cleanup Date1: 01/26/10
Cleanup Method2: EPA 3660B
Cleanup Date2: 01/26/10

Parameter	Result	Qualifie	er l	Jnits	RDL
PCB by GC - Westborough Lab for	sample(s):	32-38	Batch:	WG39	98080-1
Aroclor 1016	ND			ug/kg	3000
Aroclor 1221	ND			ug/kg	3000
Aroclor 1232	ND			ug/kg	3000
Aroclor 1242	ND			ug/kg	3000
Aroclor 1248	ND			ug/kg	2000
Aroclor 1254	ND			ug/kg	3000
Aroclor 1260	ND			ug/kg	2000
Aroclor 1262	ND			ug/kg	1000
Aroclor 1268	ND			ug/kg	1000

	Acceptance						
Surrogate	%Recovery	Qualifier	Criteria	Column			
2,4,5,6-Tetrachloro-m-xylene	88		30-150	Α			
Decachlorobiphenyl	96		30-150	Α			
2,4,5,6-Tetrachloro-m-xylene	88		30-150	В			
Decachlorobiphenyl	79		30-150	В			



Method Blank Analysis Batch Quality Control

Analytical Method: 1,8082

Analytical Date: 01/28/10 13:39

Analyst: SH

Extraction Date: 01/26/10 23:00
Cleanup Method1: EPA 3665A
Cleanup Date1: 01/28/10
Cleanup Method2: EPA 3660B
Cleanup Date2: 01/28/10

Extraction Method: EPA 3540C

PCB by GC - Westborough Lab for sample(s): 29-31 Batch: WG398252-1 Aroclor 1016 ND ug Abs 0.500 Aroclor 1221 ND ug Abs 0.500 Aroclor 1232 ND ug Abs 0.500 Aroclor 1242 ND ug Abs 0.500 Aroclor 1248 ND ug Abs 0.500 Aroclor 1254 ND ug Abs 0.500 Aroclor 1260 ND ug Abs 0.500 Aroclor 1262 ND ug Abs 0.500 Aroclor 1268 ND ug Abs 0.500	Parameter	Result	Qualifi	ier Units	RDL
Aroclor 1221 ND ug Abs 0.500 Aroclor 1232 ND ug Abs 0.500 Aroclor 1242 ND ug Abs 0.500 Aroclor 1248 ND ug Abs 0.500 Aroclor 1254 ND ug Abs 0.500 Aroclor 1260 ND ug Abs 0.500 Aroclor 1262 ND ug Abs 0.500	PCB by GC - Westborough Lab for	sample(s):	29-31	Batch: WG39	8252-1
Aroclor 1232 ND ug Abs 0.500 Aroclor 1242 ND ug Abs 0.500 Aroclor 1248 ND ug Abs 0.500 Aroclor 1254 ND ug Abs 0.500 Aroclor 1260 ND ug Abs 0.500 Aroclor 1262 ND ug Abs 0.500	Aroclor 1016	ND		ug Abs	0.500
Aroclor 1242 ND ug Abs 0.500 Aroclor 1248 ND ug Abs 0.500 Aroclor 1254 ND ug Abs 0.500 Aroclor 1260 ND ug Abs 0.500 Aroclor 1262 ND ug Abs 0.500	Aroclor 1221	ND		ug Abs	0.500
Aroclor 1248 ND ug Abs 0.500 Aroclor 1254 ND ug Abs 0.500 Aroclor 1260 ND ug Abs 0.500 Aroclor 1262 ND ug Abs 0.500	Aroclor 1232	ND		ug Abs	0.500
Aroclor 1254 ND ug Abs 0.500 Aroclor 1260 ND ug Abs 0.500 Aroclor 1262 ND ug Abs 0.500	Aroclor 1242	ND		ug Abs	0.500
Aroclor 1260 ND ug Abs 0.500 Aroclor 1262 ND ug Abs 0.500	Aroclor 1248	ND		ug Abs	0.500
Aroclor 1262 ND ug Abs 0.500	Aroclor 1254	ND		ug Abs	0.500
	Aroclor 1260	ND		ug Abs	0.500
Aroclor 1268 ND ug Abs 0.500	Aroclor 1262	ND		ug Abs	0.500
	Aroclor 1268	ND		ug Abs	0.500

	Acceptance						
Surrogate	%Recovery	Qualifier	Criteria	Column			
2,4,5,6-Tetrachloro-m-xylene	114		30-150	Α			
Decachlorobiphenyl	139		30-150	Α			
2,4,5,6-Tetrachloro-m-xylene	117		30-150	В			
Decachlorobiphenyl	107		30-150	В			



Method Blank Analysis Batch Quality Control

Analytical Method: 1,8082

Analytical Date: 01/28/10 13:39

Analyst: SH

Extraction Date: 01/26/10 23:00
Cleanup Method1: EPA 3665A
Cleanup Date1: 01/28/10
Cleanup Method2: EPA 3660B
Cleanup Date2: 01/28/10

Extraction Method: EPA 3540C

Parameter	Result	Qualifier	Units	RDL
PCB by GC - Westborough Lab fo	r sample(s):	01,08,15,22	Batch:	WG398253-1
Aroclor 1016	ND		ug/kg	59.9
Aroclor 1221	ND		ug/kg	59.9
Aroclor 1232	ND		ug/kg	59.9
Aroclor 1242	ND		ug/kg	59.9
Aroclor 1248	ND		ug/kg	39.9
Aroclor 1254	ND		ug/kg	59.9
Aroclor 1260	ND		ug/kg	39.9
Aroclor 1262	ND		ug/kg	20.0
Aroclor 1268	ND		ug/kg	20.0

Surrogate	Acceptance					
	%Recovery	Qualifier	Criteria	Column		
2.4,5,6-Tetrachloro-m-xylene	114		30-150	Α		
• • • • • • • • • • • • • • • • • • • •						
Decachlorobiphenyl	139		30-150	Α		
2,4,5,6-Tetrachloro-m-xylene	117		30-150	В		
Decachlorobiphenyl	107		30-150	В		



Lab Control Sample Analysis Batch Quality Control

Project Name: CT MDC
Project Number: 19395.50

Lab Number: L1001173

Report Date: 02/01/10

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB by GC - Westborough Lab Associated	sample(s): 32-38	Batch:	WG398080-2	WG398080-3				
Aroclor 1016	104		114		40-140	9		50
Aroclor 1260	107		106		40-140	1		50

	LCS		LCSD		Acceptance	
Surrogate	%Recovery	Qual	%Recovery	Qual	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	89		86		30-150	А
Decachlorobiphenyl	109		100		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	89		86		30-150	В
Decachlorobiphenyl	82		91		30-150	В

PCB by GC - Westborough Lab Associa	ated sample(s): 29-31	Batch: WG398252-2	WG398252-3		
Aroclor 1016	105	83	40-140	23	50
Aroclor 1260	127	108	40-140	16	50

	LCS		LCSD		Acceptance	!
Surrogate	%Recovery	Qual	%Recovery	Qual	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	94		80		30-150	Α
Decachlorobiphenyl	120		101		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	98		82		30-150	В
Decachlorobiphenyl	92		78		30-150	В



Lab Control Sample Analysis Batch Quality Control

Project Name: CT MDC
Project Number: 19395.50

Lab Number: L1001173

Report Date: 02/01/10

<u>Parameter</u>	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB by GC - Westborough Lab Associated	sample(s): 01,0	8,15,22	Batch: WG39825	3-2 WG3	398253-3			
Aroclor 1016	105		83		40-140	23		50
Aroclor 1260	127		108		40-140	16		50

	LCS		LCSD		Acceptance	
Surrogate	%Recovery	Qual	%Recovery	Qual	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	94		80		30-150	А
Decachlorobiphenyl	120		101		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	98		82		30-150	В
Decachlorobiphenyl	92		78		30-150	В

Project Name:CT MDCLab Number:L1001173Project Number:19395.50Report Date:02/01/10

Sample Receipt and Container Information

Were project specific reporting limits specified?

Cooler Information

Cooler Custody Seal A Absent

Container Info	rmation			Temp			
Container ID	Container Type	Cooler	рН	deg C	Pres	Seal	Analysis
L1001173-01A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001173-02A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-03A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-04A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-05A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-06A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-07A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-08A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001173-09A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-10A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-11A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-12A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-13A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-14A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-15A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001173-16A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-17A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-18A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-19A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-20A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-21A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-22A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001173-23A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-24A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-25A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-26A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-27A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-28A	Bag	Α	N/A	2	Υ	Absent	HOLD(14)
L1001173-29A	Bag	Α	N/A	2	Υ	Absent	PCB-8082()
L1001173-30A	Bag	Α	N/A	2	Υ	Absent	PCB-8082()



Project Name:CT MDCLab Number:L1001173Project Number:19395.50Report Date:02/01/10

Container Info	ormation			Temp			
Container ID	Container Type	Cooler	рН	deg C	Pres	Seal	Analysis
L1001173-31A	Bag	Α	N/A	2	Υ	Absent	PCB-8082()
L1001173-32A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001173-33A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001173-34A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001173-35A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001173-36A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001173-37A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001173-38A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()



Project Name:CT MDCLab Number:L1001173Project Number:19395.50Report Date:02/01/10

GLOSSARY

Acronyms

EPA · Environmental Protection Agency.

 LCS Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD · Laboratory Control Sample Duplicate: Refer to LCS.

MS • Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD · Matrix Spike Sample Duplicate: Refer to MS.

NA · Not Applicable.

NC • Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

ND · Not detected at the reported detection limit for the sample.

NI · Not Ignitable.

RDL • Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

- A Spectra identified as "Aldol Condensation Product".
- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E . Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- P The RPD between the results for the two columns exceeds the method-specified criteria.
- The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RDL. (Metals only.)
- **R** Analytical results are from sample re-analysis.
- **RE** Analytical results are from sample re-extraction.
- J : Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

Report Format: Data Usability Report



Project Name:CT MDCLab Number:L1001173Project Number:19395.50Report Date:02/01/10

REFERENCES

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Woods Hole Labs.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certificate/Approval Program Summary

Last revised January 11, 2010 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0574. NELAP Accredited Solid Waste/Soil.

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate.

Organic Parameters: Haloacetic Acids, Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP), Ethylene Dibromide (EDB).)

Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Calcium Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH.) Solid Waste/Soil (Inorganic Parameters: Lead in Paint, pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), Reactivity. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Volatile Organics, Acid Extractables (Phenols), 3.3'-Dichlorobenzidine, Phthalates,

Maine Department of Human Services Certificate/Lab ID: 2009024.

Drinking Water (Inorganic Parameters: SM9215B, 9221E, 9222B, 9222D, 9223B, EPA 180.1, 300.0, 353.2, SM2130B, 2320B, 4500Cl-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B,4500NO3-F, EPA 200.7, EPA 200.8, 245.1. Organic Parameters: 504.1, 524.2, SM 6251B.)

Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 350.1, 351.1, 353.2, 410.4, 420.1, Lachat 10-107-06-1-B, SM2320B, 2340B, 2510B, 2540C, 2540D, 426C, 4500Cl-D, 4500Cl-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-B, 4500Norg-C, 4500NH3-B, 4500NH3-B, 4500NH3-H, 4500NO3-F, 4500P-B.5, 4500P-E, 5210B, 5220D, 5310C, EPA 200.7, 200.8, 245.1. Organic Parameters: 608, 624.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA086.

Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Drinking Water

Inorganic Parameters: (EPA 200.8 for: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl)

(EPA 200.7 for: Ba,Be,Ca,Cd,Cr,Cu,Na,Ni) 245.1, (300.0 for: Nitrate-N, Fluoride, Sulfate)

353.2 for: Nitrate-N, Nitrite-N; SM4500NO3-F, 4500F-C, 4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, 2320B, SM2540C. SM4500H-B.

Organic Parameters: (EPA 524.2 for: Trihalomethanes, Volatile Organics)

(504.1 for: 1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane), 314.0, 332.

Microbiology Parameters: SM9215B; ENZ. SUB. SM9223; MF-SM9222D

Non-Potable Water

Inorganic Parameters:, (EPA 200.8 for: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn)

(EPA 200.7 for: Al,Sb,As,Be,Cd,Cr,Co,Cu,Fe,Pb,Mn,Mo,Ni,Se,Aq,Sr,Tl, V,Zn,Ca,Mq,Na,K)

245.1, SM4500H,B, EPA 120.1, SM2510B, 2540C, 2540B, 2340B, 2320B, 4500CL-E, 4500F-BC, 426C, SM4500NH3-BH, (EPA 350.1 for: Ammonia-N), LACHAT 10-107-06-1-B for Ammonia-N, SM4500NO3-F, 353.2 for Nitrate-N, SM4500NH3-B,C-Titr, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, 4500P-B,E, 5220D, EPA 410.4, SM 5210B, 5310C, 4500CL-D, EPA 1664, SM14 510AC, EPA 420.1

Organic Parameters: (EPA 624 for Volatile Halocarbons, Volatile Aromatics)

(608 for: Chlordane, Aldrin, Dieldrin, DDD, DDE, DDT, Heptachlor, Heptachlor Epoxide, PCBs-Water), EPA 625 for SVOC Acid Extractables and SVOC Base/Neutral Extractables, 600/4-81-045-PCB-Oil

New Hampshire Department of Environmental Services Certificate/Lab ID: 200307. NELAP Accredited.

Drinking Water (Inorganic Parameters: SM6215B, 9222B, 9223B Colilert, EPA 200.7, 200.8, 245.2, 120.1, 300.0, 314.0, SM4500CN-E, 4500H+B, 4500NO3-F, 2320B, 2510B, 2540C, 4500F-C, 5310C, 2120B, EPA 331.0. Organic Parameters: 504.1, 524.2, SM6251B.)

Non-Potable Water (Inorganic Parameters: SM9222D, 9221B, 9222B, 9221E-EC, EPA 200.7, 200.8, 245.1, 245.2, SW-846 6010B, 6020, 7196A, 7470A, SM3500-CR-D, EPA 120.1, 300.0, 350.1, 351.1, 353.2, 420.1, 1664A, SW-846 9010, 9030, 9040B, SM426C, SM2310B, 2540B, 2540D, 4500H+B, 4500NH3-H, 4500NH3-E, 4500NO2-B, 4500P-E, 4500-S2-D, 5210B, 2320B, 2540C, 4500F-C, 5310C, 5540C, LACHAT 10-117-07-1-B, LACHAT 10-107-06-1-B, LACHAT 10-107-04-1-J, LACHAT 10-117-07-1-A, SM4500CL-E, LACHAT 10-204-00-1-A, LACHAT 10-107-06-2-D. Organic Parameters: SW-846 3005A, 3015A, 3510C, 5030B, 8021B, 8260B, 8270C, 8330, EPA 624, 625, 608, SW-846 8082, 8081A.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6010B, 7196A, 7471A, 7.3.3.2, 7.3.4.2, 1010, 1030, 9010, 9012A, 9014, 9030B, 9040, 9045C, 9050C, 1311, 3005A, 3050B, 3051A. Organic Parameters: SW-846 3540C, 3545, 3580A, 5030B, 5035, 8021B, 8260B, 8270C, 8330, 8151A, 8082, 8081A.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA935. NELAP Accredited.

Drinking Water (Inorganic Parameters: SM9222B, 9221E, 9223B, 9215B, 4500NO3-F, 4500F-C, EPA 300.0, 200.7, 2540C, 2320B, 314.0, SM2120B, 2510B, 5310C, SM4500H-B, EPA 200.8, 245.2. Organic Parameters: 504.1, SM6251B, 524.2.)

Non-Potable Water (Inorganic Parameters: SM5210B, EPA 410.4, SM5220D, 4500Cl-D, EPA 300.0, SM2120B, SM4500F-BC, EPA 200.7, 351.1, LACHAT 10-107-06-2-D, EPA 353.2, SM4500NO3-F, 4500NO2-B, EPA 1664A, SM5310B, C or D, 4500-PE, EPA 420.1, SM4500P-B5+E, 2540B, 2540C, 2540D, EPA 120.1, SM2510B, SM15 426C, SM9221CE, 9222D, 9221B, 9222B, 9215B, 2310B, 2320B, 4500NH3-H, 4500-S D, EPA 350.1, SM5210B, SW-846 3015, 6020, 7470A, 5540C, 4500H-B, EPA 200.8, SM3500Cr-D, EPA 245.1, 245.2, SW-846 9040B, 3005A, EPA 6010B, 7196A, SW-846 9010B, 9030B. Organic Parameters: SW-846 8260B, 8270C, 3510C, EPA 608, 624, 625, SW-846 5030B, 8021B, 8081A, 8082, 8151A, 8330, NJ OQA-QAM-025 Rev.7.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 9040B, 3005A, 6010B, 7196A, 5030B, 9010B, 9030B, 1030, 1311, 3050B, 3051, 7471A, 9014, 9012A, 9045C, 9050A, 9065. Organic Parameters: SW-846 8021B, 8081A, 8082, 8151A, 8330, 8260B, 8270C, 1311, 1312, 3540C, 3545, 3550B, 3580A, 5035L, 5035H, NJ OQA-QAM-025 Rev.7.)

New York Department of Health Certificate/Lab ID: 11148. NELAP Accredited.

Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.2, SM5310C, EPA 314.0, 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500H-B, 4500NO3-F, 2540C, EPA 120.1, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, EPA 410.4, SM5220D, 2310B-4a, 2320B, EPA 200.7, 300.0, LACHAT 10-117-07-1A or B, SM4500Cl-E, 4500F-C, SM15 426C, EPA 350.1, LACHAT 10-107-06-1-B, SM4500NH3-H, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, LACHAT 10-107-041-C, SM4500-NO3-F, 4500-NO2-B, 4500P-E, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010B, 6020, EPA 7196A, S\M3500Cr-D, EPA 245.1, 245.2, 7470A, SM2120B, SM4500-CN-E LACHAT 10-204-00-1-A, EPA 9040B, SM4500-HB, EPA 1664A, SM5310C, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 3005A, 3015. Organic Parameters: EPA 624, 8260B, 8270C, 625, 608, 8081A, 8151A, 8330, 8082, EPA 3510C, 5030B, 9010B, 9030B.)

Solid & Hazardous Waste (Inorganic Parameters: 1010, 1030, SW-846 Ch 7 Sec 7.3, EPA 6010B, 7196A, 7471A, 9012A, 9014, 9040B, 9045C, 9065, 9050, EPA 1311, 1312, 3005A, 3050B, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8081A, 8151A, 8330, 8082, 3540C, 3545, 3546, 3580, 5030B, 5035.)

North Carolina Department of the Environment and Natural Resources <u>Certificate/Lab ID</u>: 666. <u>Organic Parameters</u>: MA-EPH, MA-VPH.

Pennsylvania Department of Environmental Protection Certificate/Lab ID: 68-03671. *NELAP Accredited. Non-Potable Water* (Organic Parameters: EPA 3510C, 5030B, 625, 624. 608, 8081A, 8082, 8151A, 8260B, 8270C, 8330)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010, 1030, 1311, 3050B, 3051, 6010B, EPA 7.3.3.2, EPA 7.3.4.2, 7196A, 7471A, 9010B, 9012A, 9014, 9040B, 9045C, 9050, 9065. Organic Parameters: 3540C, 3545, 3580A, 5035, 8021B, 8081A, 8082, 8151A, 8260B, 8270C, 8330)

Rhode Island Department of Health Certificate/Lab ID: LAO00065. *NELAP Accredited via NY-DOH.*Refer to MA-DEP Certificate for Potable and Non-Potable Water.
Refer to NY-DOH Certificate for Potable and Non-Potable Water.

Texas Commisson on Environmental Quality Certificate/Lab ID: T104704476-09-1. **NELAP Accredited.** Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 376.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540B, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH3-H, 4500NO2B, 4500P-E, 4500 S2⁻ D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

Utah Department of Health <u>Certificate/Lab ID</u>: AAMA. **NELAP Accredited.** *Non-Potable Water* (Inorganic Parameters: Chloride EPA 300.0)

Department of Defense Certificate/Lab ID: L2217.

Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6020, 245.1, 245.2, 7470A, 9040B, 300.0, 9251, 9038, 350.1, 353.2, 351.1, 314, 120.1, 9050A, 410.4, 9060, 1664, 420.1, LACHAT 10-107-06-1-B, SM 4500CN-E, 4500H-B, 4500CL-E, 4500F-BC, 4500SO4-E, 426C, 4500NH3-B, 4500NH3-H, 4500NO3-F, 4500NO2-B, 4500Norg-C, 4500PE, 2510B, 5540C, 5220D, 5310C, 2540B, 2540C, 2540D, 510C, 4500S2-AD, 3005A, 3015, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8330, 625, 8082, 8151A, 8081A, 3510C, 5030B.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010B, 7471A, 9040B, 9045C, 9065, 420.1, 9012A, 6860, 1311, 1312, 3050B, 9030B, 3051, 9010B, 3540C, SM 510ABC, 4500CN-CE, 2540G, SW-846 7.3, Organic Parameters: EPA 8260B, 8270C, 8330, 8082, 8081A, 8151A, 3545, 3546, 3580, 5035.)

Analytes Not Accredited by NELAP

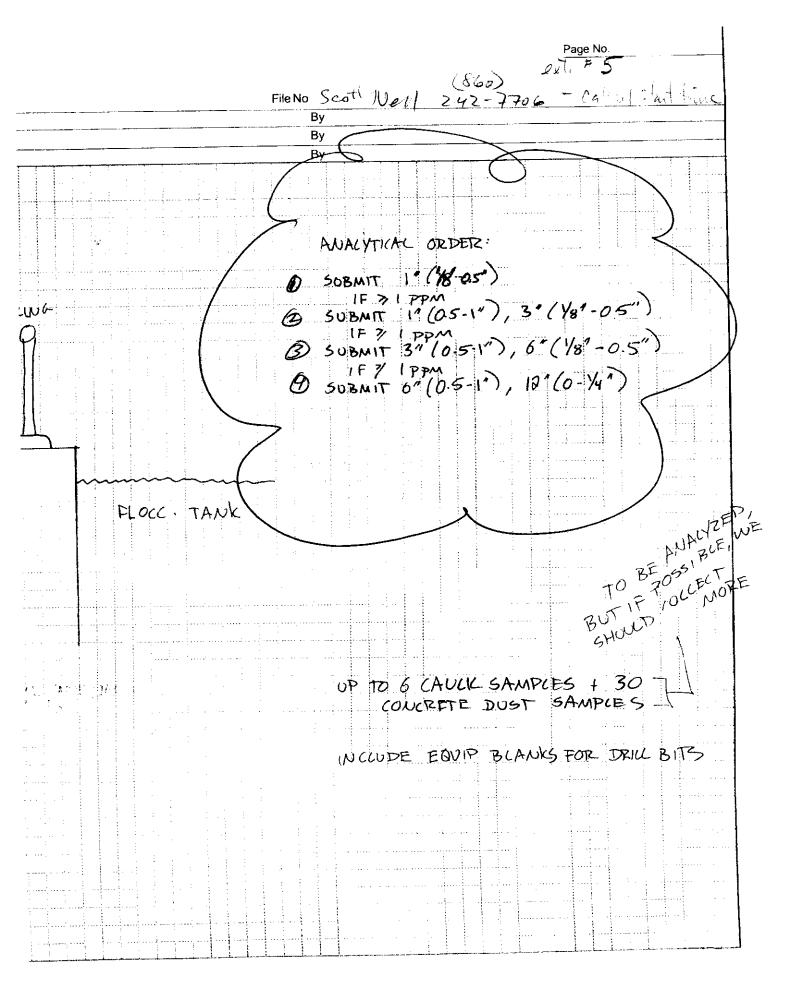
Certification is not available by NELAP for the following analytes: **EPA 8260B:** Freon-113, 1,2,4,5-Tetramethylbenzene. **EPA 8330A:** PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **EPA 8270C:** Methyl naphthalene, Dimethyl naphthalene, Total Methylnaphthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine (Azobenzene). **EPA 625:** 4-Chloroaniline. **EPA 350.1** for Ammonia in a Soil matrix.

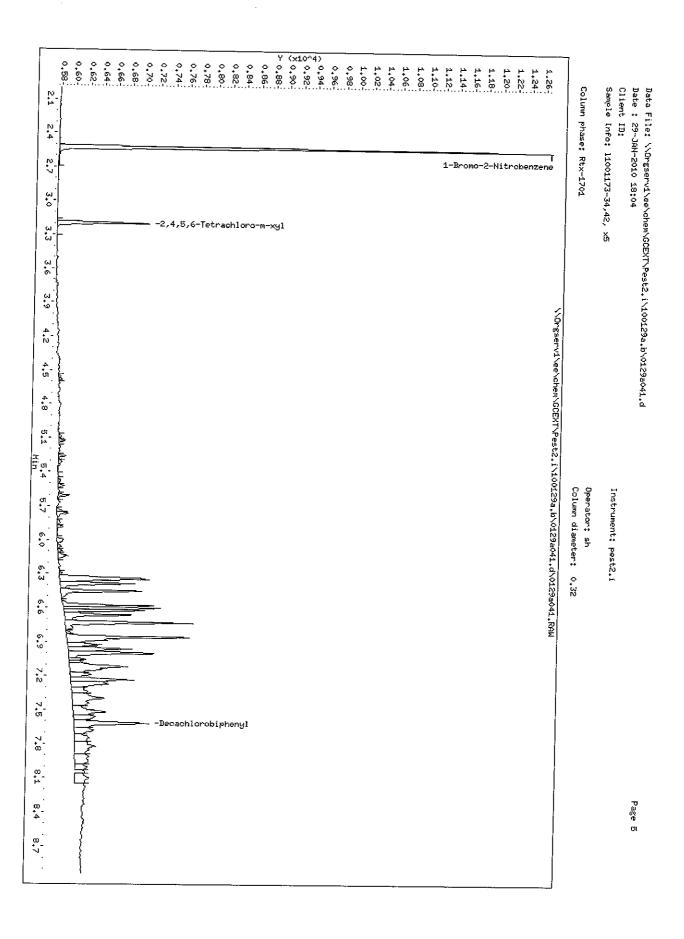
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	Are MCP Analytical Methods Required? Are CT RCP (Reasonable Confidence Protocols) Required?	1	□Yes □No	□ RUSH (anly confirmed if pre-approved!)			Phone: +61-2+8-5+66
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19395.50			□ ADEx	\$ # \(\)	Project Location: Cose TVAV	FAX: 508-822-3288 Project	FAX: 508-898-9193 Client Information
Same as Client info PO#:	æ	D FAX D EMAIL		3	Project Information Project Name: MAD	MANSFIELD, MA TEL: 508-822-9300 Project	WESTBORO, MA TEL: 508-898-9220
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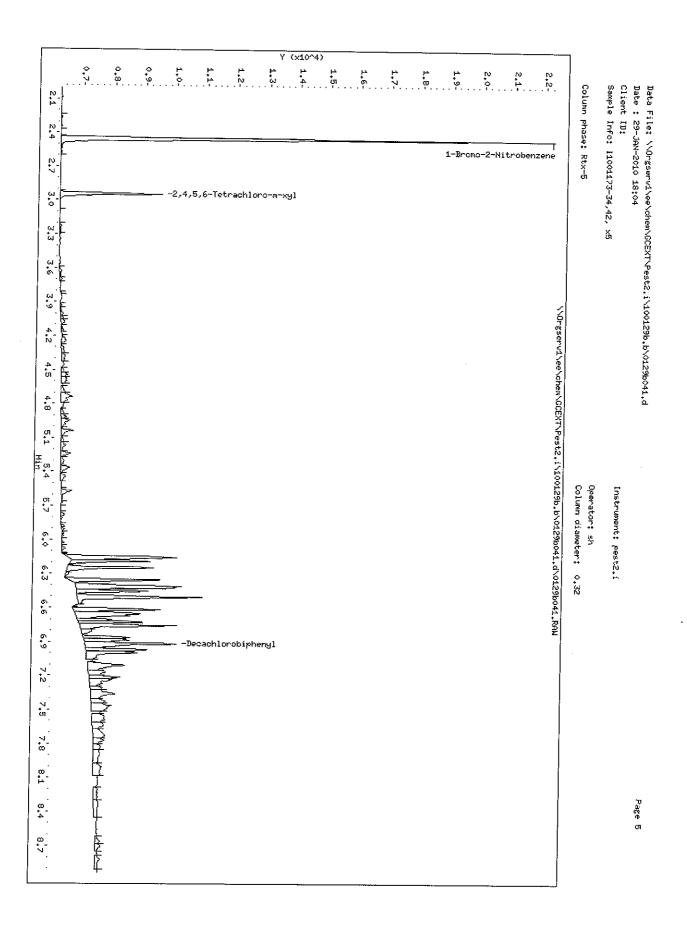
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All samples submitted are subject to Alpha's Terms and Conditions	033) ما (حد)	Mahr	1/22/10	Showth lether	MA MCP or CT RCP?
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		K A	Leone	Project Manager: Dave E	Address: 1 Edowater Dr.
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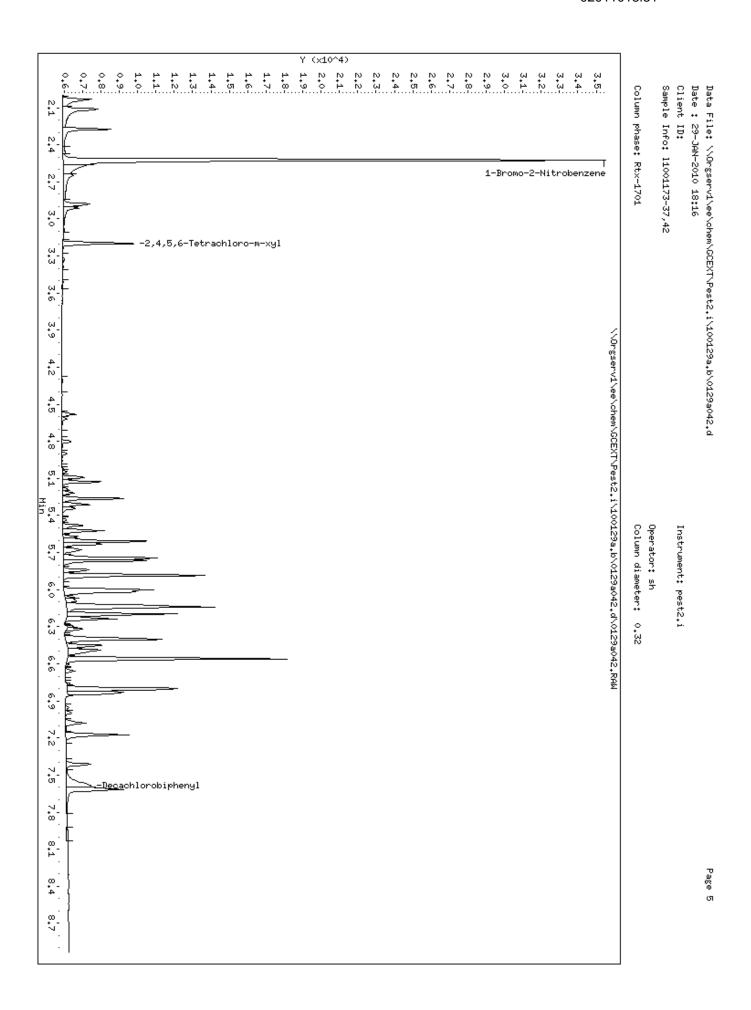
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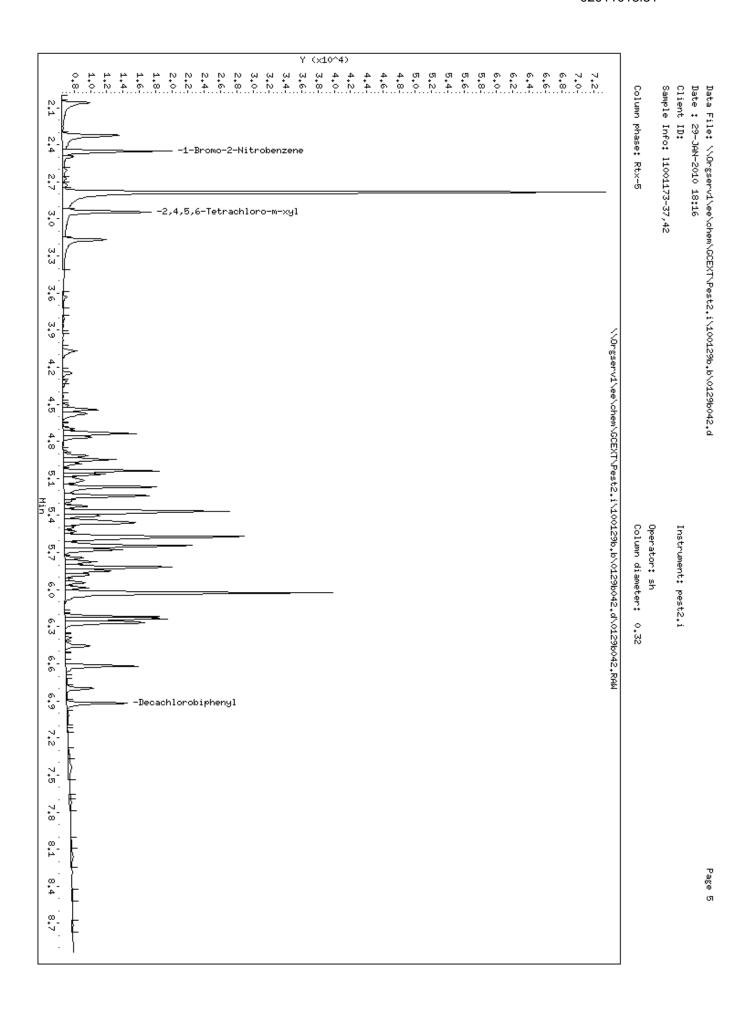
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\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	All Samples Submitted are subject to Alpha's Terms and Conditions.	pletely. Samples can not be logged in and turnaround time clock will not	Please print clearly, legibly and com-										+	Sample Specific Comments S	□ Lab to do	eded do	Filtration	SAMPLE HANDLING A	Are CT RCP (Reasonable Confidence Protocols) Required?	Analytical Methods Required?	MA MCP PRESUMPTIVE CERTAINTY CT REASONABLE CONFIDENCE PROTO-		Criteria Criteria	Deliverables 19395. 50	L Same as Client info PO#:		













ANALYTICAL REPORT

Lab Number: L1001587

Client: GZA GeoEnvironmental, Inc.

1 Edgewater Drive Norwood, MA 02062

ATTN: Dave Leone

Project Name: CT MDC
Project Number: 19395.50
Report Date: 02/08/10

Certifications & Approvals: MA (M-MA086), NY NELAC (11148), CT (PH-0574), NH (2003), NJ (MA935), RI (LAO00065), ME (MA0086), PA (Registration #68-03671), USDA (Permit #S-72578), US Army Corps of Engineers, Naval FESC.

Eight Walkup Drive, Westborough, MA 01581-1019 508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



 Project Name:
 CT MDC
 Lab Number:
 L1001587

 Project Number:
 19395.50
 Report Date:
 02/08/10

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1001587-01	CD-EXP #2, (1") 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001587-02	CD-EXP #2, (3") 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001587-03	CD-EXP #3, (1"), 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001587-04	CD-EXP #3, (3"), 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001587-05	CD-DW2, (1") 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001587-06	CD-DW2, (3") 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001587-07	CD-EXP #1, (1") 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001587-08	CD-EXP #1, (3") 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00

Project Name:CT MDCLab Number:L1001587Project Number:19395.50Report Date:02/08/10

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

PCB

L1001587-01 through -08, as well as the associated QC, have elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrices.

L1001587-01 through -04, -07 and -08 have elevated detection limits due to the dilutions required by matrix interferences encountered during the concentration of the samples.

L1001587-05 has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.



 Project Name:
 CT MDC
 Lab Number:
 L1001587

 Project Number:
 19395.50
 Report Date:
 02/08/10

Case Narrative (continued)

The surrogate recoveries for L1001587-05 are below the acceptance criteria for 2,4,5,6-Tetrachloro-m-xylene and Decachlorobiphenyl (all at 0%) due to the dilution required to quantitate the sample. Re-extraction is not required; therefore, the results of the original analysis are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Title: Technical Director/Representative Date: 02/08/10

ORGANICS



PCBS



Project Name: CT MDC Lab Number: L1001587

Project Number: 19395.50 **Report Date:** 02/08/10

SAMPLE RESULTS

Lab ID: Date Collected: 01/21/10 00:00

Client ID: CD-EXP #2, (1") 1/2"-1" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specific

Sample Location:RESERVOIR #6Field Prep:Not SpecifiedMatrix:SolidExtraction Method:EPA 3540CAnalytical Method:1,8082Extraction Date:02/04/10 11:55

 Analytical Date:
 02/08/10 09:18
 Cleanup Method1:
 EPA 3665A

 Analyst:
 SH
 Cleanup Date1:
 02/07/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 02/07/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug/kg	638	4
Aroclor 1221	ND		ug/kg	638	4
Aroclor 1232	ND		ug/kg	638	4
Aroclor 1242	ND		ug/kg	638	4
Aroclor 1248	ND		ug/kg	426	4
Aroclor 1254	3290		ug/kg	638	4
Aroclor 1260	ND		ug/kg	426	4
Aroclor 1262	11900		ug/kg	213	4
Aroclor 1268	ND		ug/kg	213	4

			Acceptance	
Surrogate	% Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	67		30-150	A
Decachlorobiphenyl	83		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	76		30-150	В
Decachlorobiphenyl	95		30-150	В



Project Name: CT MDC Lab Number: L1001587

Project Number: 19395.50 **Report Date:** 02/08/10

SAMPLE RESULTS

Lab ID: L1001587-02 Date Collected: 01/21/10 00:00

Client ID: CD-EXP #2, (3") 1/8"-1/2" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specifi

Sample Location:RESERVOIR #6Field Prep:Not SpecifiedMatrix:SolidExtraction Method:EPA 3540CAnalytical Method:1,8082Extraction Date:02/02/10 15:25

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

Cleanup Date2: 02/05/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1254	174		ug/kg	118	2
Aroclor 1262	206		ug/kg	39.5	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	56		30-150	A
Decachlorobiphenyl	44		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	61		30-150	В
Decachlorobiphenyl	52		30-150	В



Project Name: CT MDC Lab Number: L1001587

Project Number: 19395.50 **Report Date:** 02/08/10

SAMPLE RESULTS

Lab ID: L1001587-02 Date Collected: 01/21/10 00:00

Client ID: CD-EXP #2, (3") 1/8"-1/2" Date Received: 01/22/10

Sample Location:RESERVOIR #6Field Prep:Not SpecifiedMatrix:SolidExtraction Method:EPA 3540CAnalytical Method:1,8082Extraction Date:02/02/10 15:25

Analytical Method: 1,8082 Extraction Date: 02/02/10 15:25
Analytical Date: 02/05/10 09:28 Cleanup Method1: EPA 3665A
Analyst: SH Cleanup Date1: 02/05/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 02/05/10

Parameter Result Qualifier Units RDL **Dilution Factor** PCB by GC - Westborough Lab Aroclor 1016 ND ug/kg 118 2 Aroclor 1221 ND 118 2 ug/kg Aroclor 1232 ND 118 2 ug/kg Aroclor 1242 ND ug/kg 118 2 Aroclor 1248 ND 79.0 2 ug/kg Aroclor 1260 ND 79.0 2 ug/kg ND Aroclor 1268 ug/kg 39.5 2

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	56		30-150	A
Decachlorobiphenyl	44		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	61		30-150	В
Decachlorobiphenyl	52		30-150	В



Project Name: CT MDC Lab Number: L1001587

Project Number: 19395.50 **Report Date:** 02/08/10

SAMPLE RESULTS

Lab ID: L1001587-03 Date Collected: 01/21/10 00:00

Client ID: CD-EXP #3, (1"), 1/2"-1" Date Received: 01/22/10

Sample Location:RESERVOIR #6Field Prep:Not SpecifiedMatrix:SolidExtraction Method:EPA 3540CAnalytical Method:1,8082Extraction Date:02/04/10 11:5

Analytical Method: 1,8082 Extraction Date: 02/04/10 11:55
Analytical Date: 02/08/10 09:30 Cleanup Method1: EPA 3665A
Analyst: SH Cleanup Date1: 02/07/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 02/07/10

Parameter Result Qualifier Units RDL **Dilution Factor** PCB by GC - Westborough Lab Aroclor 1016 ND 299 5 ug/kg Aroclor 1221 ND 5 ug/kg 299 Aroclor 1232 ND 299 ug/kg 5 Aroclor 1242 ND 299 5 ug/kg Aroclor 1248 ND 5 ug/kg 199 ND 5 Aroclor 1254 299 ug/kg Aroclor 1260 ND ug/kg 199 5 Aroclor 1262 ND 99.6 5 ug/kg Aroclor 1268 ND 99.6 5 ug/kg

			Acceptance	
Surrogate	% Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	74		30-150	A
Decachlorobiphenyl	99		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	71		30-150	В
Decachlorobiphenyl	143		30-150	В



Project Name: CT MDC Lab Number: L1001587

Project Number: 19395.50 **Report Date:** 02/08/10

SAMPLE RESULTS

Lab ID: L1001587-04 Date Collected: 01/21/10 00:00

Client ID: CD-EXP #3, (3"), 1/8"-1/2" Date Received: 01/22/10

Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix:SolidExtraction Method:EPA 3540CAnalytical Method:1,8082Extraction Date:02/02/10 15:25

Analytical Date: 02/05/10 09:40 Cleanup Method1: EPA 3665A Analyst: SH Cleanup Date1: 02/05/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 02/05/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug/kg	169	2
Aroclor 1221	ND		ug/kg	169	2
Aroclor 1232	ND		ug/kg	169	2
Aroclor 1242	ND		ug/kg	169	2
Aroclor 1248	ND		ug/kg	113	2
Aroclor 1254	ND		ug/kg	169	2
Aroclor 1260	ND		ug/kg	113	2
Aroclor 1262	ND		ug/kg	56.5	2
Aroclor 1268	ND		ug/kg	56.5	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
	// Necovery	Quanner		
2,4,5,6-Tetrachloro-m-xylene	41		30-150	Α
Decachlorobiphenyl	37		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	45		30-150	В
Decachlorobiphenyl	44		30-150	В



Project Name: CT MDC Lab Number: L1001587

Project Number: 19395.50 **Report Date:** 02/08/10

SAMPLE RESULTS

Lab ID: L1001587-05 Date Collected: 01/21/10 00:00

Client ID: CD-DW2, (1") 1/2"-1" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Solid Extraction Method: EPA 3540C
Analytical Method: 1,8082 Extraction Date: 02/02/10 15

Analytical Method: 1,8082 Extraction Date: 02/02/10 15:25
Analytical Date: 02/04/10 16:06 Cleanup Method1: EPA 3665A
Analyst: SH Cleanup Date1: 02/03/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 02/03/10

Parameter Result Qualifier Units RDL Dilution Factor
PCB by GC - Westborough Lab

Aroclor 1254 7730 ug/kg 1190 20

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	А
Decachlorobiphenyl	0	Q	30-150	А
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В
Decachlorobiphenyl	0	Q	30-150	В

02/02/10 15:25

EPA 3665A

02/03/10

Project Name: CT MDC Lab Number: L1001587

Project Number: 19395.50 **Report Date:** 02/08/10

SAMPLE RESULTS

Lab ID: L1001587-05 Date Collected: 01/21/10 00:00

Client ID: CD-DW2, (1") 1/2"-1" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specified
Matrix: Solid Extraction Method: EPA 3540C

Matrix: Solid Analytical Method: 1,8082

Analytical Date: 02/04/10 16:06

Analyst: SH

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Cleanup Method2: EPA 3660B Cleanup Date2: 02/03/10

Extraction Date:

Cleanup Date1:

Cleanup Method1:

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug/kg	1190	20
Aroclor 1221	ND		ug/kg	1190	20
Aroclor 1232	ND		ug/kg	1190	20
Aroclor 1242	ND		ug/kg	1190	20
Aroclor 1248	ND		ug/kg	794	20
Aroclor 1260	ND		ug/kg	794	20
Aroclor 1262	5640		ug/kg	397	20
Aroclor 1268	ND		ug/kg	397	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	A
Decachlorobiphenyl	0	Q	30-150	Α
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В
Decachlorobiphenyl	0	Q	30-150	В



Project Name: CT MDC Lab Number: L1001587

Project Number: 19395.50 **Report Date:** 02/08/10

SAMPLE RESULTS

Lab ID: Date Collected: 01/21/10 00:00

Client ID: CD-DW2, (3") 1/8"-1/2" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix:SolidExtraction Method:EPA 3540CAnalytical Method:1,8082Extraction Date:02/02/10 15:25

Analytical Date: 02/03/10 17:53 Cleanup Method1: EPA 3665A Analyst: SH Cleanup Date1: 02/03/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

Cleanup Date2: 02/03/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1262	45.0		ug/kg	25.4	1

		Acceptance				
Surrogate	% Recovery	Qualifier	Criteria	Column		
2,4,5,6-Tetrachloro-m-xylene	57		30-150	А		
Decachlorobiphenyl	55		30-150	Α		
2,4,5,6-Tetrachloro-m-xylene	62		30-150	В		
Decachlorobiphenyl	63		30-150	В		

EPA 3540C

02/02/10 15:25

Project Name: CT MDC Lab Number: L1001587

Project Number: 19395.50 **Report Date:** 02/08/10

SAMPLE RESULTS

Lab ID: L1001587-06 Date Collected: 01/21/10 00:00

Client ID: CD-DW2, (3") 1/8"-1/2" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Solid Extraction Method: Analytical Method: 1,8082 Extraction Date:

Analytical Date: 02/03/10 17:53 Cleanup Method1: EPA 3665A Analyst: SH Cleanup Date1: 02/03/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 02/03/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug/kg	76.3	1
Aroclor 1221	ND		ug/kg	76.3	' 1
Aroclor 1232	ND		ug/kg	76.3	<u>.</u> 1
Aroclor 1242	ND		ug/kg	76.3	1
Aroclor 1248	ND		ug/kg	50.9	1
Aroclor 1254	ND		ug/kg	76.3	1
Aroclor 1260	ND		ug/kg	50.9	1
Aroclor 1268	ND		ug/kg	25.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	57		30-150	A
Decachlorobiphenyl	55		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	62		30-150	В
Decachlorobiphenyl	63		30-150	В



4

78.7

ug/kg

Project Name: CT MDC Lab Number: L1001587

Project Number: 19395.50 **Report Date:** 02/08/10

SAMPLE RESULTS

Lab ID: L1001587-07 Date Collected: 01/21/10 00:00

Client ID: CD-EXP #1, (1") 1/2"-1" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specific

Sample Location:RESERVOIR #6Field Prep:Not SpecifiedMatrix:SolidExtraction Method:EPA 3540CAnalytical Method:1,8082Extraction Date:02/02/10 23:24

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 02/05/10

Parameter Result Qualifier Units RDL Dilution Factor

PCB by GC - Westborough Lab

Aroclor 1254 3050 ug/kg 236 4

2750

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	95		30-150	А
Decachlorobiphenyl	82		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	104		30-150	В
Decachlorobiphenyl	95		30-150	В



Aroclor 1262

Project Name: CT MDC Lab Number: L1001587

Project Number: 19395.50 **Report Date:** 02/08/10

SAMPLE RESULTS

Lab ID: L1001587-07 Date Collected: 01/21/10 00:00

Client ID: CD-EXP #1, (1") 1/2"-1" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Solid Extraction Method: EPA 3540C
Analytical Method: 1,8082 Extraction Date: 02/02/10 23:24

 Analytical Date:
 02/05/10 09:52
 Cleanup Method1:
 EPA 3665A

 Analyst:
 SH
 Cleanup Date1:
 02/05/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 02/05/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug/kg	236	4
Aroclor 1221	ND		ug/kg	236	4
Aroclor 1232	ND		ug/kg	236	4
Aroclor 1242	ND		ug/kg	236	4
Aroclor 1248	ND		ug/kg	157	4
Aroclor 1260	ND		ug/kg	157	4
Aroclor 1268	ND		ug/kg	78.7	4

	Acceptance					
Surrogate	% Recovery	Qualifier	Criteria	Column		
2,4,5,6-Tetrachloro-m-xylene	95		30-150	А		
Decachlorobiphenyl	82		30-150	Α		
2,4,5,6-Tetrachloro-m-xylene	104		30-150	В		
Decachlorobiphenyl	95		30-150	В		



Project Name: CT MDC Lab Number: L1001587

Project Number: 19395.50 **Report Date:** 02/08/10

SAMPLE RESULTS

Lab ID: L1001587-08 Date Collected: 01/21/10 00:00

Client ID: CD-EXP #1, (3") 1/8"-1/2" Date Received: 01/22/10

Sample Location: RESERVOIR #6 Field Prep: Not Specified Matrix: Solid Extraction Method: EPA 3540C

Analytical Method: 1 8082 Extraction Date: 02/02/10 23:24

 Analytical Method:
 1,8082
 Extraction Date:
 02/02/10 23:24

 Analytical Date:
 02/05/10 10:05
 Cleanup Method1:
 EPA 3665A

 Analyst:
 SH
 Cleanup Date1:
 02/05/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

Cleanup Date2: 02/05/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1254	328		ug/kg	239	4
Aroclor 1262	170		ug/kg	79.7	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	87		30-150	Α
Decachlorobiphenyl	66		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	94		30-150	В
Decachlorobiphenyl	79		30-150	В



4

4

159

79.7

ug/kg

ug/kg

Project Name: CT MDC Lab Number: L1001587

Project Number: 19395.50 **Report Date:** 02/08/10

SAMPLE RESULTS

Lab ID: L1001587-08 Date Collected: 01/21/10 00:00

Client ID: CD-EXP #1, (3") 1/8"-1/2" Date Received: 01/22/10

Sample Location: RESERVOIR #6 Field Prep: Not Specified Matrix: Solid Extraction Method: EPA 3540C

Analytical Method: 1,8082 Extraction Date: 02/02/10 23:24
Analytical Date: 02/05/10 10:05 Cleanup Method1: EPA 3665A
Analyst: SH Cleanup Date1: 02/05/10

Analyst: SH Cleanup Date1: 02/05/10
Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B
Cleanup Date2: 02/05/10

Parameter Result Qualifier Units RDL **Dilution Factor** PCB by GC - Westborough Lab Aroclor 1016 ND ug/kg 239 4 Aroclor 1221 ND 239 ug/kg 4 Aroclor 1232 ND 239 4 ug/kg Aroclor 1242 ND ug/kg 239 4 Aroclor 1248 ND 159 4 ug/kg

ND

ND

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	87		30-150	Α
Decachlorobiphenyl	66		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	94		30-150	В
Decachlorobiphenyl	79		30-150	В



Aroclor 1260

Aroclor 1268

 Project Name:
 CT MDC
 Lab Number:
 L1001587

 Project Number:
 19395.50
 Report Date:
 02/08/10

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082

Analytical Date: 02/03/10 12:24

Analyst: SH

Extraction Date: 02/02/10 15:25
Cleanup Method1: EPA 3665A
Cleanup Date1: 02/03/10
Cleanup Method2: EPA 3660B
Cleanup Date2: 02/03/10

Extraction Method: EPA 3540C

PCB by GC - Westborough Lab for sample(s): 02,04-08 Batch: WG399144-1 Aroclor 1016 ND ug/kg 19.9 Aroclor 1221 ND ug/kg 19.9 Aroclor 1232 ND ug/kg 19.9 Aroclor 1242 ND ug/kg 19.9 Aroclor 1248 ND ug/kg 13.2 Aroclor 1254 ND ug/kg 19.9 Aroclor 1260 ND ug/kg 13.2 Aroclor 1262 ND ug/kg 6.63 Aroclor 1268 ND ug/kg 6.63	Parameter	Result	Qualifier	Units	RDL
Aroclor 1221 ND ug/kg 19.9 Aroclor 1232 ND ug/kg 19.9 Aroclor 1242 ND ug/kg 19.9 Aroclor 1248 ND ug/kg 13.2 Aroclor 1254 ND ug/kg 19.9 Aroclor 1260 ND ug/kg 13.2 Aroclor 1262 ND ug/kg 6.63	PCB by GC - Westborough Lab for	sample(s):	02,04-08	Batch: W	G399144-1
Aroclor 1232 ND ug/kg 19.9 Aroclor 1242 ND ug/kg 19.9 Aroclor 1248 ND ug/kg 13.2 Aroclor 1254 ND ug/kg 19.9 Aroclor 1260 ND ug/kg 13.2 Aroclor 1262 ND ug/kg 6.63	Aroclor 1016	ND		ug/kg	19.9
Aroclor 1242 ND ug/kg 19.9 Aroclor 1248 ND ug/kg 13.2 Aroclor 1254 ND ug/kg 19.9 Aroclor 1260 ND ug/kg 13.2 Aroclor 1262 ND ug/kg 6.63	Aroclor 1221	ND		ug/kg	19.9
Aroclor 1248 ND ug/kg 13.2 Aroclor 1254 ND ug/kg 19.9 Aroclor 1260 ND ug/kg 13.2 Aroclor 1262 ND ug/kg 6.63	Aroclor 1232	ND		ug/kg	19.9
Aroclor 1254 ND ug/kg 19.9 Aroclor 1260 ND ug/kg 13.2 Aroclor 1262 ND ug/kg 6.63	Aroclor 1242	ND		ug/kg	19.9
Aroclor 1260 ND ug/kg 13.2 Aroclor 1262 ND ug/kg 6.63	Aroclor 1248	ND		ug/kg	13.2
Aroclor 1262 ND ug/kg 6.63	Aroclor 1254	ND		ug/kg	19.9
	Aroclor 1260	ND		ug/kg	13.2
Aroclor 1268 ND ug/kg 6.63	Aroclor 1262	ND		ug/kg	6.63
0 0	Aroclor 1268	ND		ug/kg	6.63

			Acceptance	9
Surrogate	%Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	73		30-150	Α
Decachlorobiphenyl	77		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	79		30-150	В
Decachlorobiphenyl	75		30-150	В



 Project Name:
 CT MDC
 Lab Number:
 L1001587

 Project Number:
 19395.50
 Report Date:
 02/08/10

Method Blank Analysis Batch Quality Control

Analytical Method: 1,8082

Analytical Date: 02/08/10 08:29

Analyst: SH

Extraction Method: EPA 3540C
Extraction Date: 02/04/10 11:55
Cleanup Method1: EPA 3665A
Cleanup Date1: 02/07/10
Cleanup Method2: EPA 3660B
Cleanup Date2: 02/07/10

Parameter	Result	Qualif	ier l	Units	RDL
PCB by GC - Westborough Lab for	sample(s):	01,03	Batch:	WG39	9456-1
Aroclor 1016	ND			ug/kg	58.7
Aroclor 1221	ND			ug/kg	58.7
Aroclor 1232	ND			ug/kg	58.7
Aroclor 1242	ND			ug/kg	58.7
Aroclor 1248	ND			ug/kg	39.1
Aroclor 1254	ND			ug/kg	58.7
Aroclor 1260	ND			ug/kg	39.1
Aroclor 1262	ND			ug/kg	19.6
Aroclor 1268	ND			ug/kg	19.6

			Acceptance	9
Surrogate	%Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	57		30-150	А
Decachlorobiphenyl	57		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	57		30-150	В
Decachlorobiphenyl	53		30-150	В



Lab Control Sample Analysis Batch Quality Control

Project Name: CT MDC
Project Number: 19395.50

Lab Number: L1001587

Report Date: 02/08/10

Parameter	LCS %Recovery	Qual	LCSD %Recovery	%Recovery Qual Limits	RPD	Qual	RPD Limits
PCB by GC - Westborough Lab Associ	iated sample(s): 02,0	4-08 Batch:	WG399144-2	WG399144-3			
Aroclor 1016	87		88	40-140	1		50
Aroclor 1260	91		90	40-140	1		50

	LCS		LCSD		Acceptance	
Surrogate	%Recovery	Qual	%Recovery	Qual	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	80		72		30-150	А
Decachlorobiphenyl	84		79		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	84		64		30-150	В
Decachlorobiphenyl	78		62		30-150	В

PCB by GC - Westborough Lab Associated sa	ample(s): 01,03	Batch: WG39945	6-2 WG399456-3		
Aroclor 1016	68	68	40-140	0	50
Aroclor 1260	66	65	40-140	2	50

	LCS		LCSD		Acceptance	
Surrogate	%Recovery	Qual	%Recovery	Qual	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	61		62		30-150	Α
Decachlorobiphenyl	64		62		30-150	A
2,4,5,6-Tetrachloro-m-xylene	59		58		30-150	В
Decachlorobiphenyl	50		51		30-150	В



Project Name:CT MDCLab Number:L1001587Project Number:19395.50Report Date:02/08/10

Sample Receipt and Container Information

Were project specific reporting limits specified?

Cooler Information

Cooler Custody Seal A Absent

Container Info	rmation			Temp			
Container ID	Container Type	Cooler	рН	deg C	Pres	Seal	Analysis
L1001587-01A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001587-02A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001587-03A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001587-04A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001587-05A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001587-06A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001587-07A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001587-08A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()



Project Name:CT MDCLab Number:L1001587Project Number:19395.50Report Date:02/08/10

GLOSSARY

Acronyms

EPA · Environmental Protection Agency.

LCS Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD · Laboratory Control Sample Duplicate: Refer to LCS.

MS • Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD · Matrix Spike Sample Duplicate: Refer to MS.

NA · Not Applicable.

NC · Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

ND · Not detected at the reported detection limit for the sample.

NI · Not Ignitable.

RDL • Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

- A Spectra identified as "Aldol Condensation Product".
- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E . Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- ${f P}$ The RPD between the results for the two columns exceeds the method-specified criteria.
- The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RDL. (Metals only.)
- **R** Analytical results are from sample re-analysis.
- **RE** Analytical results are from sample re-extraction.
- J :Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

Report Format: Data Usability Report



Project Name: CT MDC Lab Number: L1001587

Project Number: 19395.50 Report Date: 02/08/10

REFERENCES

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Woods Hole Labs.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certificate/Approval Program Summary

Last revised January 11, 2010 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0574. NELAP Accredited Solid Waste/Soil.

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate.

Organic Parameters: Haloacetic Acids, Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP), Ethylene Dibromide (EDB).)

Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Calcium Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH.) Solid Waste/Soil (Inorganic Parameters: Lead in Paint, pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), Reactivity. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Volatile Organics, Acid Extractables (Phenols), 3.3'-Dichlorobenzidine, Phthalates,

Maine Department of Human Services Certificate/Lab ID: 2009024.

Drinking Water (Inorganic Parameters: SM9215B, 9221E, 9222B, 9222D, 9223B, EPA 180.1, 300.0, 353.2, SM2130B, 2320B, 4500Cl-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B,4500NO3-F, EPA 200.7, EPA 200.8, 245.1. Organic Parameters: 504.1, 524.2, SM 6251B.)

Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 350.1, 351.1, 353.2, 410.4, 420.1, Lachat 10-107-06-1-B, SM2320B, 2340B, 2510B, 2540C, 2540D, 426C, 4500Cl-D, 4500Cl-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-B, 4500Norg-C, 4500NH3-B, 4500NH3-B, 4500NH3-H, 4500NO3-F, 4500P-B.5, 4500P-E, 5210B, 5220D, 5310C, EPA 200.7, 200.8, 245.1. Organic Parameters: 608, 624.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA086.

Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Drinking Water

Inorganic Parameters: (EPA 200.8 for: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl)

(EPA 200.7 for: Ba,Be,Ca,Cd,Cr,Cu,Na,Ni) 245.1, (300.0 for: Nitrate-N, Fluoride, Sulfate)

353.2 for: Nitrate-N, Nitrite-N; SM4500NO3-F, 4500F-C, 4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, 2320B, SM2540C. SM4500H-B.

Organic Parameters: (EPA 524.2 for: Trihalomethanes, Volatile Organics)

(504.1 for: 1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane), 314.0, 332.

Microbiology Parameters: SM9215B; ENZ. SUB. SM9223; MF-SM9222D

Non-Potable Water

Inorganic Parameters:, (EPA 200.8 for: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn)

(EPA 200.7 for: Al,Sb,As,Be,Cd,Cr,Co,Cu,Fe,Pb,Mn,Mo,Ni,Se,Aq,Sr,Tl, V,Zn,Ca,Mq,Na,K)

245.1, SM4500H,B, EPA 120.1, SM2510B, 2540C, 2540B, 2340B, 2320B, 4500CL-E, 4500F-BC, 426C, SM4500NH3-BH, (EPA 350.1 for: Ammonia-N), LACHAT 10-107-06-1-B for Ammonia-N, SM4500NO3-F, 353.2 for Nitrate-N, SM4500NH3-B,C-Titr, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, 4500P-B,E, 5220D, EPA 410.4, SM 5210B, 5310C, 4500CL-D, EPA 1664, SM14 510AC, EPA 420.1

Organic Parameters: (EPA 624 for Volatile Halocarbons, Volatile Aromatics)

(608 for: Chlordane, Aldrin, Dieldrin, DDD, DDE, DDT, Heptachlor, Heptachlor Epoxide, PCBs-Water), EPA 625 for SVOC Acid Extractables and SVOC Base/Neutral Extractables, 600/4-81-045-PCB-Oil

New Hampshire Department of Environmental Services Certificate/Lab ID: 200307. NELAP Accredited.

Drinking Water (Inorganic Parameters: SM6215B, 9222B, 9223B Colilert, EPA 200.7, 200.8, 245.2, 120.1, 300.0, 314.0, SM4500CN-E, 4500H+B, 4500NO3-F, 2320B, 2510B, 2540C, 4500F-C, 5310C, 2120B, EPA 331.0. Organic Parameters: 504.1, 524.2, SM6251B.)

Non-Potable Water (Inorganic Parameters: SM9222D, 9221B, 9222B, 9221E-EC, EPA 200.7, 200.8, 245.1, 245.2, SW-846 6010B, 6020, 7196A, 7470A, SM3500-CR-D, EPA 120.1, 300.0, 350.1, 351.1, 353.2, 420.1, 1664A, SW-846 9010, 9030, 9040B, SM426C, SM2310B, 2540B, 2540D, 4500H+B, 4500NH3-H, 4500NH3-E, 4500NO2-B, 4500P-E, 4500-S2-D, 5210B, 2320B, 2540C, 4500F-C, 5310C, 5540C, LACHAT 10-117-07-1-B, LACHAT 10-107-06-1-B, LACHAT 10-107-04-1-J, LACHAT 10-117-07-1-A, SM4500CL-E, LACHAT 10-204-00-1-A, LACHAT 10-107-06-2-D. Organic Parameters: SW-846 3005A, 3015A, 3510C, 5030B, 8021B, 8260B, 8270C, 8330, EPA 624, 625, 608, SW-846 8082, 8081A.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6010B, 7196A, 7471A, 7.3.3.2, 7.3.4.2, 1010, 1030, 9010, 9012A, 9014, 9030B, 9040, 9045C, 9050C, 1311, 3005A, 3050B, 3051A. Organic Parameters: SW-846 3540C, 3545, 3580A, 5030B, 5035, 8021B, 8260B, 8270C, 8330, 8151A, 8082, 8081A.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA935. NELAP Accredited.

Drinking Water (Inorganic Parameters: SM9222B, 9221E, 9223B, 9215B, 4500NO3-F, 4500F-C, EPA 300.0, 200.7, 2540C, 2320B, 314.0, SM2120B, 2510B, 5310C, SM4500H-B, EPA 200.8, 245.2. Organic Parameters: 504.1, SM6251B, 524.2.)

Non-Potable Water (Inorganic Parameters: SM5210B, EPA 410.4, SM5220D, 4500Cl-D, EPA 300.0, SM2120B, SM4500F-BC, EPA 200.7, 351.1, LACHAT 10-107-06-2-D, EPA 353.2, SM4500NO3-F, 4500NO2-B, EPA 1664A, SM5310B, C or D, 4500-PE, EPA 420.1, SM4500P-B5+E, 2540B, 2540C, 2540D, EPA 120.1, SM2510B, SM15 426C, SM9221CE, 9222D, 9221B, 9222B, 9215B, 2310B, 2320B, 4500NH3-H, 4500-S D, EPA 350.1, SM5210B, SW-846 3015, 6020, 7470A, 5540C, 4500H-B, EPA 200.8, SM3500Cr-D, EPA 245.1, 245.2, SW-846 9040B, 3005A, EPA 6010B, 7196A, SW-846 9010B, 9030B. Organic Parameters: SW-846 8260B, 8270C, 3510C, EPA 608, 624, 625, SW-846 5030B, 8021B, 8081A, 8082, 8151A, 8330, NJ OQA-QAM-025 Rev.7.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 9040B, 3005A, 6010B, 7196A, 5030B, 9010B, 9030B, 1030, 1311, 3050B, 3051, 7471A, 9014, 9012A, 9045C, 9050A, 9065. Organic Parameters: SW-846 8021B, 8081A, 8082, 8151A, 8330, 8260B, 8270C, 1311, 1312, 3540C, 3545, 3550B, 3580A, 5035L, 5035H, NJ OQA-QAM-025 Rev.7.)

New York Department of Health Certificate/Lab ID: 11148. NELAP Accredited.

Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.2, SM5310C, EPA 314.0, 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500H-B, 4500NO3-F, 2540C, EPA 120.1, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, EPA 410.4, SM5220D, 2310B-4a, 2320B, EPA 200.7, 300.0, LACHAT 10-117-07-1A or B, SM4500Cl-E, 4500F-C, SM15 426C, EPA 350.1, LACHAT 10-107-06-1-B, SM4500NH3-H, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, LACHAT 10-107-041-C, SM4500-NO3-F, 4500-NO2-B, 4500P-E, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010B, 6020, EPA 7196A, S\M3500Cr-D, EPA 245.1, 245.2, 7470A, SM2120B, SM4500-CN-E LACHAT 10-204-00-1-A, EPA 9040B, SM4500-HB, EPA 1664A, SM5310C, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 3005A, 3015. Organic Parameters: EPA 624, 8260B, 8270C, 625, 608, 8081A, 8151A, 8330, 8082, EPA 3510C, 5030B, 9010B, 9030B.)

Solid & Hazardous Waste (Inorganic Parameters: 1010, 1030, SW-846 Ch 7 Sec 7.3, EPA 6010B, 7196A, 7471A, 9012A, 9014, 9040B, 9045C, 9065, 9050, EPA 1311, 1312, 3005A, 3050B, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8081A, 8151A, 8330, 8082, 3540C, 3545, 3546, 3580, 5030B, 5035.)

North Carolina Department of the Environment and Natural Resources <u>Certificate/Lab ID</u>: 666. <u>Organic Parameters</u>: MA-EPH, MA-VPH.

Pennsylvania Department of Environmental Protection Certificate/Lab ID: 68-03671. *NELAP Accredited. Non-Potable Water* (Organic Parameters: EPA 3510C, 5030B, 625, 624. 608, 8081A, 8082, 8151A, 8260B, 8270C, 8330)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010, 1030, 1311, 3050B, 3051, 6010B, EPA 7.3.3.2, EPA 7.3.4.2, 7196A, 7471A, 9010B, 9012A, 9014, 9040B, 9045C, 9050, 9065. Organic Parameters: 3540C, 3545, 3580A, 5035, 8021B, 8081A, 8082, 8151A, 8260B, 8270C, 8330)

Rhode Island Department of Health Certificate/Lab ID: LAO00065. *NELAP Accredited via NY-DOH.*Refer to MA-DEP Certificate for Potable and Non-Potable Water.
Refer to NY-DOH Certificate for Potable and Non-Potable Water.

Texas Commisson on Environmental Quality Certificate/Lab ID: T104704476-09-1. *NELAP Accredited*. *Non-Potable Water* (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 376.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH3-H, 4500NO2B, 4500P-E, 4500 S2⁻ D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

Utah Department of Health Certificate/Lab ID: AAMA. **NELAP Accredited.** Non-Potable Water (Inorganic Parameters: Chloride EPA 300.0)

Department of Defense Certificate/Lab ID: L2217.

Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6020, 245.1, 245.2, 7470A, 9040B, 300.0, 9251, 9038, 350.1, 353.2, 351.1, 314, 120.1, 9050A, 410.4, 9060, 1664, 420.1, LACHAT 10-107-06-1-B, SM 4500CN-E, 4500H-B, 4500CL-E, 4500F-BC, 4500SO4-E, 426C, 4500NH3-B, 4500NH3-H, 4500NO3-F, 4500NO2-B, 4500NOg-C, 4500PE, 2510B, 5540C, 5220D, 5310C, 2540B, 2540C, 2540D, 510C, 4500S2-AD, 3005A, 3015, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8330, 625, 8082, 8151A, 8081A, 3510C, 5030B.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010B, 7471A, 9040B, 9045C, 9065, 420.1, 9012A, 6860, 1311, 1312, 3050B, 9030B, 3051, 9010B, 3540C, SM 510ABC, 4500CN-CE, 2540G, SW-846 7.3, Organic Parameters: EPA 8260B, 8270C, 8330, 8082, 8081A, 8151A, 3545, 3546, 3580, 5035.)

Analytes Not Accredited by NELAP

Certification is not available by NELAP for the following analytes: **EPA 8260B**: Freon-113, 1,2,4,5-Tetramethylbenzene. **EPA 8330A**: PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **EPA 8270C**: Methyl naphthalene, Dimethyl naphthalene, Total Methylnapthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine (Azobenzene). **EPA 625**: 4-Chloroaniline. **EPA 350.1** for Ammonia in a Soil matrix.

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	TEL: 508-822-9300 FAX: 508-822-9288
Report Information - Data Deliverables	NANSFIELD MA
PAGE 3 OF 4 Date Recod in Lab: 1/22/6	CHAIN OF CUSTODY



ANALYTICAL REPORT

Lab Number: L1001946

Client: GZA GeoEnvironmental, Inc.

1 Edgewater Drive Norwood, MA 02062

ATTN: Dave Leone

Project Name: CT MDC
Project Number: 19395.50
Report Date: 02/17/10

Certifications & Approvals: MA (M-MA086), NY NELAC (11148), CT (PH-0574), NH (2003), NJ (MA935), RI (LAO00065), ME (MA0086), PA (Registration #68-03671), USDA (Permit #S-72578), US Army Corps of Engineers, Naval FESC.

Eight Walkup Drive, Westborough, MA 01581-1019 508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



 Project Name:
 CT MDC
 Lab Number:
 L1001946

 Project Number:
 19395.50
 Report Date:
 02/17/10

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1001946-01	CD-EXP. #1, (3"), 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001946-02	CD-EXP #1, (6"), 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001946-03	CD-EXP #2, (3"), 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001946-04	CD-EXP #2, (6"), 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00
L1001946-05	CD-DW2, (3"), 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1001946-06	CD-DW2, (6"), 1/8"-1/2"	RESERVOIR #6	01/21/10 00:00



Project Name:CT MDCLab Number:L1001946Project Number:19395.50Report Date:02/17/10

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

PCB

L1001946-01 through -06 have elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix, and due to the dilutions required by matrix interferences encountered during the concentration of the samples.

The surrogate recovery for L1001946-02 is below the individual acceptance criteria for 2,4,5,6-Tetrachloro-m-xylene (28%), but within the overall method allowances.

The surrogate recoveries for L1001946-03 are below the acceptance criteria for 2,4,5,6-Tetrachloro-m-xylene and Decachlorobiphenyl (all at 0%) due to the dilutions required to quantitate the sample. Re-extraction is not required; therefore, the results of the original analysis are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Title: Technical Director/Representative Date: 02/17/10

ORGANICS



PCBS



Project Name: CT MDC Lab Number: L1001946

Project Number: 19395.50 **Report Date:** 02/17/10

SAMPLE RESULTS

Lab ID: L1001946-01 Date Collected: 01/21/10 00:00

Client ID: CD-EXP. #1, (3"), 1/2"-1" Date Received: 01/22/10

Sample Location: RESERVOIR #6 Field Prep: Not Specified Matrix: Solid Extraction Method: EPA 3540C

 Analytical Method:
 1,8082
 Extraction Date:
 02/09/10 16:20

 Analytical Date:
 02/11/10 20:01
 Cleanup Method1:
 EPA 3665A

 Analyst:
 SH
 Cleanup Date1:
 02/10/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 02/10/10

Parameter Result Qualifier Units RDL **Dilution Factor** PCB by GC - Westborough Lab Aroclor 1016 ND 299 5 ug/kg Aroclor 1221 ND 5 ug/kg 299 Aroclor 1232 ND 299 ug/kg 5 Aroclor 1242 ND 299 5 ug/kg Aroclor 1248 ND 5 ug/kg 199 Aroclor 1254 ND 5 299 ug/kg ND Aroclor 1260 ug/kg 199 5 Aroclor 1262 ND ug/kg 99.6 5 Aroclor 1268 ND 99.6 5 ug/kg

	Acceptance				
Surrogate	% Recovery	Qualifier	Criteria	Column	
2,4,5,6-Tetrachloro-m-xylene	38		30-150	A	
Decachlorobiphenyl	34		30-150	Α	
2,4,5,6-Tetrachloro-m-xylene	31		30-150	В	
Decachlorobiphenyl	33		30-150	В	



Project Name: CT MDC Lab Number: L1001946

Project Number: 19395.50 **Report Date:** 02/17/10

SAMPLE RESULTS

Lab ID: L1001946-02 Date Collected: 01/21/10 00:00

Client ID: CD-EXP #1, (6"), 1/8"-1/2" Date Received: 01/22/10

Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix:SolidExtraction Method:EPA 3540CAnalytical Method:1,8082Extraction Date:02/09/10 16:20

Analytical Date: 02/11/10 20:14 Cleanup Method1: EPA 3665A Analyst: SH Cleanup Date1: 02/10/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 02/10/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug/kg	240	4
Aroclor 1221	ND		ug/kg	240	4
Aroclor 1232	ND		ug/kg	240	4
Aroclor 1242	ND		ug/kg	240	4
Aroclor 1248	ND		ug/kg	160	4
Aroclor 1254	ND		ug/kg	240	4
Aroclor 1260	ND		ug/kg	160	4
Aroclor 1262	ND		ug/kg	79.8	4
Aroclor 1268	ND		ug/kg	79.8	4

			Acceptance	
Surrogate	% Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	36		30-150	A
Decachlorobiphenyl	35		30-150	А
2,4,5,6-Tetrachloro-m-xylene	28	Q	30-150	В
Decachlorobiphenyl	30		30-150	В



Project Name: CT MDC Lab Number: L1001946

Project Number: 19395.50 **Report Date:** 02/17/10

SAMPLE RESULTS

Lab ID: L1001946-03 Date Collected: 01/21/10 00:00

Client ID: CD-EXP #2, (3"), 1/2"-1" Date Received: 01/22/10

Sample Location: RESERVOIR #6 Field Prep: Not Specified Matrix: Solid Extraction Method: EPA 3540C

Analytical Method: 1,8082 Extraction Date: 02/09/10 16:20
Analytical Date: 02/11/10 20:26 Cleanup Method1: EPA 3665A

Analyst: SH Cleanup Date1: 02/10/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

Cleanup Date2: 02/10/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug/kg	469	8
Aroclor 1221	ND		ug/kg	469	8
Aroclor 1232	ND		ug/kg	469	8
Aroclor 1242	ND		ug/kg	469	8
Aroclor 1248	ND		ug/kg	312	8
Aroclor 1254	ND		ug/kg	469	8
Aroclor 1260	ND		ug/kg	312	8
Aroclor 1268	ND		ug/kg	156	8

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column	
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	A	
Decachlorobiphenyl	0	Q	30-150	Α	
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В	
Decachlorobiphenyl	0	Q	30-150	В	



Project Name: CT MDC Lab Number: L1001946

Project Number: 19395.50 **Report Date:** 02/17/10

SAMPLE RESULTS

Lab ID: L1001946-03 Date Collected: 01/21/10 00:00

Client ID: CD-EXP #2, (3"), 1/2"-1" Date Received: 01/22/10

Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Solid Extraction Method: EPA 3540C

Matrix:SolidExtraction Method:EPA 3540CAnalytical Method:1,8082Extraction Date:02/09/10 16:20

Analytical Date: 02/11/10 20:26 Cleanup Method1: EPA 3665A Analyst: SH Cleanup Date1: 02/10/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

Cleanup Date2: 02/10/10

ParameterResultQualifierUnitsRDLDilution FactorPCB by GC - Westborough LabAroclor 1262394ug/kg1568

Surrogate	% Recovery	Qualifier	Acceptance Qualifier Criteria			
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	A		
Decachlorobiphenyl	0	Q	30-150	Α		
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	В		
Decachlorobiphenyl	0	Q	30-150	В		

02/09/10 16:20

Extraction Date:

Project Name: CT MDC Lab Number: L1001946

Project Number: 19395.50 **Report Date:** 02/17/10

SAMPLE RESULTS

Lab ID: L1001946-04 Date Collected: 01/21/10 00:00

Client ID: CD-EXP #2, (6"), 1/8"-1/2" Date Received: 01/22/10

Sample Location: RESERVOIR #6 Field Prep: Not Specified Matrix: Solid Extraction Method: EPA 3540C

Matrix: Solid
Analytical Method: 1,8082

Analytical Date: 02/11/10 20:38 Cleanup Method1: EPA 3665A Analyst: SH Cleanup Date1: 02/10/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

Cleanup Date2: 02/10/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug/kg	179	3
Aroclor 1221	ND		ug/kg	179	3
Aroclor 1232	ND		ug/kg	179	3
Aroclor 1242	ND		ug/kg	179	3
Aroclor 1248	ND		ug/kg	119	3
Aroclor 1254	ND		ug/kg	179	3
Aroclor 1260	ND		ug/kg	119	3
Aroclor 1262	ND		ug/kg	59.6	3
Aroclor 1268	ND		ug/kg	59.6	3

	A				
Surrogate	% Recovery	Qualifier	Criteria	Column	
2,4,5,6-Tetrachloro-m-xylene	64		30-150	A	
Decachlorobiphenyl	79		30-150	А	
2,4,5,6-Tetrachloro-m-xylene	67		30-150	В	
Decachlorobiphenyl	67		30-150	В	



Project Name: CT MDC Lab Number: L1001946

Project Number: 19395.50 **Report Date:** 02/17/10

SAMPLE RESULTS

Lab ID: L1001946-05 Date Collected: 01/21/10 00:00

Client ID: CD-DW2, (3"), 1/2"-1" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Solid Extraction Method: EPA 3540C

Analytical Method: 1,8082 Extraction Date: 02/09/10 16:20

Analytical Date: 02/11/10 20:51 Cleanup Method1: EPA 3665A Analyst: SH Cleanup Date1: 02/10/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 02/10/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
A	ND			470	•
Aroclor 1016	ND		ug/kg	172	3
Aroclor 1221	ND		ug/kg	172	3
Aroclor 1232	ND		ug/kg	172	3
Aroclor 1242	ND		ug/kg	172	3
Aroclor 1248	ND		ug/kg	115	3
Aroclor 1254	ND		ug/kg	172	3
Aroclor 1260	ND		ug/kg	115	3
Aroclor 1262	ND		ug/kg	57.5	3
Aroclor 1268	ND		ug/kg	57.5	3

_			Acceptance Criteria	
Surrogate	% Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	78		30-150	Α
Decachlorobiphenyl	104		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	71		30-150	В
Decachlorobiphenyl	76		30-150	В



Project Name: CT MDC Lab Number: L1001946

Project Number: 19395.50 **Report Date:** 02/17/10

SAMPLE RESULTS

Lab ID: L1001946-06 Date Collected: 01/21/10 00:00

Client ID: CD-DW2, (6"), 1/8"-1/2" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specifi

Sample Location:RESERVOIR #6Field Prep:Not SpecifiedMatrix:SolidExtraction Method:EPA 3540CAnalytical Method:1,8082Extraction Date:02/09/10 16:20

Analytical Method: 1,8082 Extraction Date: 02/09/10 16:20
Analytical Date: 02/11/10 21:03 Cleanup Method1: EPA 3665A
Analyst: SH Cleanup Date1: 02/10/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

Cleanup Date2: 02/10/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1254	2780		ug/kg	177	3
Aroclor 1262	923		ug/kg	58.9	3

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	60		30-150	A
Decachlorobiphenyl	83		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	67		30-150	В
Decachlorobiphenyl	69		30-150	В



Project Name: CT MDC Lab Number: L1001946

Project Number: 19395.50 **Report Date:** 02/17/10

SAMPLE RESULTS

Lab ID: L1001946-06 Date Collected: 01/21/10 00:00

Client ID: CD-DW2, (6"), 1/8"-1/2" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specifi

Sample Location:RESERVOIR #6Field Prep:Not SpecifiedMatrix:SolidExtraction Method:EPA 3540CAnalytical Method:1,8082Extraction Date:02/09/10 16:20

Analytical Date: 02/11/10 21:03 Cleanup Method1: EPA 3665A Analyst: SH Cleanup Date1: 02/10/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 02/10/10

Parameter Result Qualifier Units RDL **Dilution Factor** PCB by GC - Westborough Lab Aroclor 1016 ND ug/kg 177 3 Aroclor 1221 ND 177 3 ug/kg Aroclor 1232 ND 177 ug/kg 3 Aroclor 1242 ND ug/kg 177 3 Aroclor 1248 ND 118 3 ug/kg Aroclor 1260 ND 3 118 ug/kg ND Aroclor 1268 ug/kg 58.9 3

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	60		30-150	Α
Decachlorobiphenyl	83		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	67		30-150	В
Decachlorobiphenyl	69		30-150	В



 Project Name:
 CT MDC
 Lab Number:
 L1001946

 Project Number:
 19395.50
 Report Date:
 02/17/10

Method Blank Analysis Batch Quality Control

Analytical Method: 1,8082

Analytical Date: 02/11/10 10:17

Analyst: SH

Extraction Date: 02/09/10 16:20
Cleanup Method1: EPA 3665A
Cleanup Date1: 02/10/10
Cleanup Method2: EPA 3660B
Cleanup Date2: 02/10/10

Extraction Method: EPA 3540C

CB by GC - Westborough Lab for sample(s): 01-06 Batch: WG400093-1 Aroclor 1016 ND ug/kg 20.0 Aroclor 1221 ND ug/kg 20.0 Aroclor 1232 ND ug/kg 20.0 Aroclor 1242 ND ug/kg 20.0 Aroclor 1248 ND ug/kg 13.3 Aroclor 1254 ND ug/kg 20.0 Aroclor 1260 ND ug/kg 6.67 Aroclor 1262 ND ug/kg 6.67 Aroclor 1268 ND ug/kg 6.67	Parameter	Result	Qualifi	er Units	RDL
Aroclor 1221 ND ug/kg 20.0 Aroclor 1232 ND ug/kg 20.0 Aroclor 1242 ND ug/kg 20.0 Aroclor 1248 ND ug/kg 13.3 Aroclor 1254 ND ug/kg 20.0 Aroclor 1260 ND ug/kg 13.3 Aroclor 1262 ND ug/kg 6.67	PCB by GC - Westborough Lab for	sample(s):	01-06	Batch: WG400	093-1
Aroclor 1232 ND ug/kg 20.0 Aroclor 1242 ND ug/kg 20.0 Aroclor 1248 ND ug/kg 13.3 Aroclor 1254 ND ug/kg 20.0 Aroclor 1260 ND ug/kg 13.3 Aroclor 1262 ND ug/kg 6.67	Aroclor 1016	ND		ug/kg	20.0
Aroclor 1242 ND ug/kg 20.0 Aroclor 1248 ND ug/kg 13.3 Aroclor 1254 ND ug/kg 20.0 Aroclor 1260 ND ug/kg 13.3 Aroclor 1262 ND ug/kg 6.67	Aroclor 1221	ND		ug/kg	20.0
Aroclor 1248 ND ug/kg 13.3 Aroclor 1254 ND ug/kg 20.0 Aroclor 1260 ND ug/kg 13.3 Aroclor 1262 ND ug/kg 6.67	Aroclor 1232	ND		ug/kg	20.0
Aroclor 1254 ND ug/kg 20.0 Aroclor 1260 ND ug/kg 13.3 Aroclor 1262 ND ug/kg 6.67	Aroclor 1242	ND		ug/kg	20.0
Aroclor 1260 ND ug/kg 13.3 Aroclor 1262 ND ug/kg 6.67	Aroclor 1248	ND		ug/kg	13.3
Aroclor 1262 ND ug/kg 6.67	Aroclor 1254	ND		ug/kg	20.0
1919	Aroclor 1260	ND		ug/kg	13.3
Aroclor 1268 ND ug/kg 6.67	Aroclor 1262	ND		ug/kg	6.67
	Aroclor 1268	ND		ug/kg	6.67

Surrogate%RecoveryQualifierCriteria2,4,5,6-Tetrachloro-m-xylene8130-150Decachlorobiphenyl8230-1502,4,5,6-Tetrachloro-m-xylene7930-150		ceptance
Decachlorobiphenyl 82 30-150	urrogate	Criteria Colum
	,4,5,6-Tetrachloro-m-xylene	30-150 A
2 4 5 6-Tetrachloro-m-xylene 79 30-150	ecachlorobiphenyl	30-150 A
2,4,0,0 Telladilloto III Xyletic	,4,5,6-Tetrachloro-m-xylene	30-150 B
Decachlorobiphenyl 73 30-150	ecachlorobiphenyl	30-150 B



Lab Control Sample Analysis Batch Quality Control

Project Name: CT MDC **Project Number:** 19395.50

Lab Number: L1001946

Report Date: 02/17/10

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB by GC - Westborough Lab Associated	sample(s): 01-06	Batch:	WG400093-2	WG400093-3				
Aroclor 1016	77		95		40-140	21		50
Aroclor 1260	86		91		40-140	6		50

	LCS		LCSD		Acceptance	:
Surrogate	%Recovery	Qual	%Recovery	Qual	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	67		79		30-150	Α
Decachlorobiphenyl	73		79		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	68		77		30-150	В
Decachlorobiphenyl	68		72		30-150	В



Project Name: Lab Number: L1001946 CT MDC

Report Date: 02/17/10 Project Number: 19395.50

Sample Receipt and Container Information

YES Were project specific reporting limits specified?

Cooler Information

Cooler **Custody Seal** Α Absent

Container Info	ormation			Temp			
Container ID	Container Type	Cooler	рН	deg C	Pres	Seal	Analysis
L1001946-01A	Amber 250ml unpreserved	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001946-02A	Amber 250ml unpreserved	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001946-03A	Amber 250ml unpreserved	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001946-04A	Amber 250ml unpreserved	Α	N/A	2	Υ	Absent	PCB-8082LL()
L1001946-05A	Amber 250ml unpreserved	Α	N/A	2	Υ	Absent	PCB-8082LL()
I 1001946-06A	Amber 250ml uppreserved	Α	N/A	2	Υ	Absent	PCB-8082LL()



Project Name: CT MDC Lab Number: L1001946

Project Number: 19395.50 Report Date: 02/17/10

GLOSSARY

Acronyms

EPA · Environmental Protection Agency.

 LCS Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD · Laboratory Control Sample Duplicate: Refer to LCS.

MS • Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD · Matrix Spike Sample Duplicate: Refer to MS.

NA · Not Applicable.

NC · Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

ND · Not detected at the reported detection limit for the sample.

NI · Not Ignitable.

RDL - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

- A Spectra identified as "Aldol Condensation Product".
- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E -Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- P The RPD between the results for the two columns exceeds the method-specified criteria.
- Q The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RDL. (Metals only.)
- **R** Analytical results are from sample re-analysis.
- **RE** Analytical results are from sample re-extraction.
- J :Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

Report Format: Data Usability Report



Project Name:CT MDCLab Number:L1001946Project Number:19395.50Report Date:02/17/10

REFERENCES

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Woods Hole Labs.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certificate/Approval Program Summary

Last revised January 11, 2010 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0574. NELAP Accredited Solid Waste/Soil.

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate.

Organic Parameters: Haloacetic Acids, Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP), Ethylene Dibromide (EDB).)

Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Calcium Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH.) Solid Waste/Soil (Inorganic Parameters: Lead in Paint, pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), Reactivity. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Volatile Organics, Acid Extractables (Phenols), 3.3'-Dichlorobenzidine, Phthalates,

Maine Department of Human Services Certificate/Lab ID: 2009024.

Drinking Water (Inorganic Parameters: SM9215B, 9221E, 9222B, 9222D, 9223B, EPA 180.1, 300.0, 353.2, SM2130B, 2320B, 4500Cl-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B,4500NO3-F, EPA 200.7, EPA 200.8, 245.1. Organic Parameters: 504.1, 524.2, SM 6251B.)

Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 350.1, 351.1, 353.2, 410.4, 420.1, Lachat 10-107-06-1-B, SM2320B, 2340B, 2510B, 2540C, 2540D, 426C, 4500Cl-D, 4500Cl-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-B, 4500Norg-C, 4500NH3-B, 4500NH3-B, 4500NH3-H, 4500NO3-F, 4500P-B.5, 4500P-E, 5210B, 5220D, 5310C, EPA 200.7, 200.8, 245.1. Organic Parameters: 608, 624.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA086.

Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Drinking Water

Inorganic Parameters: (EPA 200.8 for: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl)

(EPA 200.7 for: Ba,Be,Ca,Cd,Cr,Cu,Na,Ni) 245.1, (300.0 for: Nitrate-N, Fluoride, Sulfate)

353.2 for: Nitrate-N, Nitrite-N; SM4500NO3-F, 4500F-C, 4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, 2320B, SM2540C. SM4500H-B.

Organic Parameters: (EPA 524.2 for: Trihalomethanes, Volatile Organics)

(504.1 for: 1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane), 314.0, 332.

Microbiology Parameters: SM9215B; ENZ. SUB. SM9223; MF-SM9222D

Non-Potable Water

Inorganic Parameters:, (EPA 200.8 for: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn)

(EPA 200.7 for: Al,Sb,As,Be,Cd,Cr,Co,Cu,Fe,Pb,Mn,Mo,Ni,Se,Aq,Sr,Tl, V,Zn,Ca,Mq,Na,K)

245.1, SM4500H,B, EPA 120.1, SM2510B, 2540C, 2540B, 2340B, 2320B, 4500CL-E, 4500F-BC, 426C, SM4500NH3-BH, (EPA 350.1 for: Ammonia-N), LACHAT 10-107-06-1-B for Ammonia-N, SM4500NO3-F, 353.2 for Nitrate-N, SM4500NH3-B,C-Titr, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, 4500P-B,E, 5220D, EPA 410.4, SM 5210B, 5310C, 4500CL-D, EPA 1664, SM14 510AC, EPA 420.1

Organic Parameters: (EPA 624 for Volatile Halocarbons, Volatile Aromatics)

(608 for: Chlordane, Aldrin, Dieldrin, DDD, DDE, DDT, Heptachlor, Heptachlor Epoxide, PCBs-Water), EPA 625 for SVOC Acid Extractables and SVOC Base/Neutral Extractables, 600/4-81-045-PCB-Oil

New Hampshire Department of Environmental Services Certificate/Lab ID: 200307. NELAP Accredited.

Drinking Water (Inorganic Parameters: SM6215B, 9222B, 9223B Colilert, EPA 200.7, 200.8, 245.2, 120.1, 300.0, 314.0, SM4500CN-E, 4500H+B, 4500NO3-F, 2320B, 2510B, 2540C, 4500F-C, 5310C, 2120B, EPA 331.0. Organic Parameters: 504.1, 524.2, SM6251B.)

Non-Potable Water (Inorganic Parameters: SM9222D, 9221B, 9222B, 9221E-EC, EPA 200.7, 200.8, 245.1, 245.2, SW-846 6010B, 6020, 7196A, 7470A, SM3500-CR-D, EPA 120.1, 300.0, 350.1, 351.1, 353.2, 420.1, 1664A, SW-846 9010, 9030, 9040B, SM426C, SM2310B, 2540B, 2540D, 4500H+B, 4500NH3-H, 4500NH3-E, 4500NO2-B, 4500P-E, 4500-S2-D, 5210B, 2320B, 2540C, 4500F-C, 5310C, 5540C, LACHAT 10-117-07-1-B, LACHAT 10-107-06-1-B, LACHAT 10-107-04-1-J, LACHAT 10-117-07-1-A, SM4500CL-E, LACHAT 10-204-00-1-A, LACHAT 10-107-06-2-D. Organic Parameters: SW-846 3005A, 3015A, 3510C, 5030B, 8021B, 8260B, 8270C, 8330, EPA 624, 625, 608, SW-846 8082, 8081A.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6010B, 7196A, 7471A, 7.3.3.2, 7.3.4.2, 1010, 1030, 9010, 9012A, 9014, 9030B, 9040, 9045C, 9050C, 1311, 3005A, 3050B, 3051A. Organic Parameters: SW-846 3540C, 3545, 3580A, 5030B, 5035, 8021B, 8260B, 8270C, 8330, 8151A, 8082, 8081A.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA935. NELAP Accredited.

Drinking Water (Inorganic Parameters: SM9222B, 9221E, 9223B, 9215B, 4500NO3-F, 4500F-C, EPA 300.0, 200.7, 2540C, 2320B, 314.0, SM2120B, 2510B, 5310C, SM4500H-B, EPA 200.8, 245.2. Organic Parameters: 504.1, SM6251B, 524.2.)

Non-Potable Water (Inorganic Parameters: SM5210B, EPA 410.4, SM5220D, 4500Cl-D, EPA 300.0, SM2120B, SM4500F-BC, EPA 200.7, 351.1, LACHAT 10-107-06-2-D, EPA 353.2, SM4500NO3-F, 4500NO2-B, EPA 1664A, SM5310B, C or D, 4500-PE, EPA 420.1, SM4500P-B5+E, 2540B, 2540C, 2540D, EPA 120.1, SM2510B, SM15 426C, SM9221CE, 9222D, 9221B, 9222B, 9215B, 2310B, 2320B, 4500NH3-H, 4500-S D, EPA 350.1, SM5210B, SW-846 3015, 6020, 7470A, 5540C, 4500H-B, EPA 200.8, SM3500Cr-D, EPA 245.1, 245.2, SW-846 9040B, 3005A, EPA 6010B, 7196A, SW-846 9010B, 9030B. Organic Parameters: SW-846 8260B, 8270C, 3510C, EPA 608, 624, 625, SW-846 5030B, 8021B, 8081A, 8082, 8151A, 8330, NJ OQA-QAM-025 Rev.7.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 9040B, 3005A, 6010B, 7196A, 5030B, 9010B, 9030B, 1030, 1311, 3050B, 3051, 7471A, 9014, 9012A, 9045C, 9050A, 9065. Organic Parameters: SW-846 8021B, 8081A, 8082, 8151A, 8330, 8260B, 8270C, 1311, 1312, 3540C, 3545, 3550B, 3580A, 5035L, 5035H, NJ OQA-QAM-025 Rev.7.)

New York Department of Health Certificate/Lab ID: 11148. NELAP Accredited.

Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.2, SM5310C, EPA 314.0, 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500H-B, 4500NO3-F, 2540C, EPA 120.1, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, EPA 410.4, SM5220D, 2310B-4a, 2320B, EPA 200.7, 300.0, LACHAT 10-117-07-1A or B, SM4500Cl-E, 4500F-C, SM15 426C, EPA 350.1, LACHAT 10-107-06-1-B, SM4500NH3-H, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, LACHAT 10-107-041-C, SM4500-NO3-F, 4500-NO2-B, 4500P-E, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010B, 6020, EPA 7196A, S\M3500Cr-D, EPA 245.1, 245.2, 7470A, SM2120B, SM4500-CN-E LACHAT 10-204-00-1-A, EPA 9040B, SM4500-HB, EPA 1664A, SM5310C, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 3005A, 3015. Organic Parameters: EPA 624, 8260B, 8270C, 625, 608, 8081A, 8151A, 8330, 8082, EPA 3510C, 5030B, 9010B, 9030B.)

Solid & Hazardous Waste (Inorganic Parameters: 1010, 1030, SW-846 Ch 7 Sec 7.3, EPA 6010B, 7196A, 7471A, 9012A, 9014, 9040B, 9045C, 9065, 9050, EPA 1311, 1312, 3005A, 3050B, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8081A, 8151A, 8330, 8082, 3540C, 3545, 3546, 3580, 5030B, 5035.)

North Carolina Department of the Environment and Natural Resources <u>Certificate/Lab ID</u>: 666. <u>Organic Parameters</u>: MA-EPH, MA-VPH.

Pennsylvania Department of Environmental Protection Certificate/Lab ID: 68-03671. *NELAP Accredited. Non-Potable Water* (Organic Parameters: EPA 3510C, 5030B, 625, 624. 608, 8081A, 8082, 8151A, 8260B, 8270C, 8330)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010, 1030, 1311, 3050B, 3051, 6010B, EPA 7.3.3.2, EPA 7.3.4.2, 7196A, 7471A, 9010B, 9012A, 9014, 9040B, 9045C, 9050, 9065. Organic Parameters: 3540C, 3545, 3580A, 5035, 8021B, 8081A, 8082, 8151A, 8260B, 8270C, 8330)

Rhode Island Department of Health Certificate/Lab ID: LAO00065. *NELAP Accredited via NY-DOH.*Refer to MA-DEP Certificate for Potable and Non-Potable Water.
Refer to NY-DOH Certificate for Potable and Non-Potable Water.

Texas Commisson on Environmental Quality Certificate/Lab ID: T104704476-09-1. *NELAP Accredited*. *Non-Potable Water* (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 376.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540B, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH3-H, 4500NO2B, 4500P-E, 4500 S2⁻ D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

Utah Department of Health <u>Certificate/Lab ID</u>: AAMA. **NELAP Accredited.** *Non-Potable Water* (Inorganic Parameters: Chloride EPA 300.0)

Department of Defense Certificate/Lab ID: L2217.

Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6020, 245.1, 245.2, 7470A, 9040B, 300.0, 9251, 9038, 350.1, 353.2, 351.1, 314, 120.1, 9050A, 410.4, 9060, 1664, 420.1, LACHAT 10-107-06-1-B, SM 4500CN-E, 4500H-B, 4500CL-E, 4500F-BC, 4500SO4-E, 426C, 4500NH3-B, 4500NH3-H, 4500NO3-F, 4500NO2-B, 4500Norg-C, 4500PE, 2510B, 5540C, 5220D, 5310C, 2540B, 2540C, 2540D, 510C, 4500S2-AD, 3005A, 3015, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8330, 625, 8082, 8151A, 8081A, 3510C, 5030B.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010B, 7471A, 9040B, 9045C, 9065, 420.1, 9012A, 6860, 1311, 1312, 3050B, 9030B, 3051, 9010B, 3540C, SM 510ABC, 4500CN-CE, 2540G, SW-846 7.3, Organic Parameters: EPA 8260B, 8270C, 8330, 8082, 8081A, 8151A, 3545, 3546, 3580, 5035.)

Analytes Not Accredited by NELAP

Certification is not available by NELAP for the following analytes: **EPA 8260B:** Freon-113, 1,2,4,5-Tetramethylbenzene. **EPA 8330A:** PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **EPA 8270C:** Methyl naphthalene, Dimethyl naphthalene, Total Methylnaphthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine (Azobenzene). **EPA 625:** 4-Chloroaniline. **EPA 350.1** for Ammonia in a Soil matrix.

start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.		Received By: Date/Time Public 1/00 1/330 1/330 1/340 1/330 1/340 1/330 1/34	Date/Time //22//0 //32/)* (7)0	Thus the March	MA MCP or CT RCP?	MA NO
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rotocols) Required?	☐ Yes ☐ No Are CTRCP (Reasonable Confidence Protocols) Required?	TRUSH to a confirmat the comment	B Standard D R	Fax:
	☐ Yes ☐ No Are MCP Analytical Methods Required?		Turn-Around Time	Phone: 781-278-5766
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	rements/Rop		Project #: 19395; 50	Client: 62A
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☐ Same as Client info PO#:	☐ FAX ☐ EMAIL ☐ Same	MDC	Project Name: CTMDC	FAX: 508-898-9193 FAX: 508-822-9300
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VE CERTAINTY CT REASONABLE CONFIDENCE PROTO-	TY CT REASONAE	MA MCP PRESUMPTIVE CERTAIN		ALPHA Quote #:	Nurwood MA 02062
		CA X		Project Manager: Dave F. Leone	owater Dr.
	ia .	State /Fed Program Criteria		Project #: 19395,	Client: 6-24
17393.30	imits	Partilatory Requirements/Report Limits		Project Location: Roservoter #6	ation
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rmation	ables Billing Information	Report Information - Data Deliverables		Project Information	
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ANALYTICAL REPORT

Lab Number: L1002832

Client: GZA GeoEnvironmental, Inc.

1 Edgewater Drive Norwood, MA 02062

ATTN: Dave Leone

Project Name: CT MDC
Project Number: 19395.50
Report Date: 03/02/10

Certifications & Approvals: MA (M-MA086), NY NELAC (11148), CT (PH-0574), NH (2003), NJ (MA935), RI (LAO00065), ME (MA0086), PA (Registration #68-03671), USDA (Permit #S-72578), US Army Corps of Engineers, Naval FESC.

Eight Walkup Drive, Westborough, MA 01581-1019 508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



 Project Name:
 CT MDC
 Lab Number:
 L1002832

 Project Number:
 19395.50
 Report Date:
 03/02/10

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1002832-01	CD-DW2, (6"), 1/2"-1"	RESERVOIR #6	01/21/10 00:00
L1002832-02	CD-DW2. (12"). 0"-1/4"	RESERVOIR #6	01/21/10 00:00



 Project Name:
 CT MDC
 Lab Number:
 L1002832

 Project Number:
 19395.50
 Report Date:
 03/02/10

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.	

PCB

L1002832-01 and -02 have elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix, and the dilution required by matrix interferences encountered during the concentration of the samples.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Title: Technical Director/Representative

ДІРНА

Date: 03/02/10

ORGANICS



PCBS



EPA 3540C

02/26/10 09:06

Project Name: CT MDC Lab Number: L1002832

Project Number: 19395.50 **Report Date:** 03/02/10

SAMPLE RESULTS

Lab ID: L1002832-01 Date Collected: 01/21/10 00:00

Client ID: CD-DW2, (6"), 1/2"-1" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Solid Extraction Method:
Analytical Method: 1,8082 Extraction Date:

Analytical Date: 03/01/10 01:42 Cleanup Method1: EPA 3665A Analyst: JB Cleanup Date1: 02/28/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 02/28/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug/kg	418	7
Aroclor 1221	ND		ug/kg	418	7
Aroclor 1232	ND		ug/kg	418	7
Aroclor 1242	ND		ug/kg	418	7
Aroclor 1248	ND		ug/kg	279	7
Aroclor 1254	ND		ug/kg	418	7
Aroclor 1260	ND		ug/kg	279	7
Aroclor 1262	ND		ug/kg	139	7
Aroclor 1268	ND		ug/kg	139	7

			Acceptance	
Surrogate	% Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	44		30-150	A
Decachlorobiphenyl	62		30-150	А
2,4,5,6-Tetrachloro-m-xylene	46		30-150	В
Decachlorobiphenyl	89		30-150	В



Project Name: CT MDC Lab Number: L1002832

Project Number: 19395.50 **Report Date:** 03/02/10

SAMPLE RESULTS

Lab ID: L1002832-02 Date Collected: 01/21/10 00:00

Client ID: CD-DW2, (12"), 0"-1/4" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specific

Sample Location:RESERVOIR #6Field Prep:Not SpecifiedMatrix:SolidExtraction Method:EPA 3540CAnalytical Method:1,8082Extraction Date:02/26/10 09:06

Analytical Date: 03/01/10 01:54 Cleanup Method1: EPA 3665A Analyst: JB Cleanup Date1: 02/28/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B Cleanup Date2: 02/28/10

Parameter	Result	Qualifier	Units	RDL	Dilution Factor
PCB by GC - Westborough Lab					
Aroclor 1016	ND		ug/kg	354	6
Aroclor 1221	ND		ug/kg	354	6
Aroclor 1232	ND		ug/kg	354	6
Aroclor 1242	ND		ug/kg	354	6
Aroclor 1248	ND		ug/kg	236	6
Aroclor 1260	ND		ug/kg	236	6
Aroclor 1262	ND		ug/kg	118	6
Aroclor 1268	ND		ug/kg	118	6

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	42		30-150	Α
Decachlorobiphenyl	75		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	44		30-150	В
Decachlorobiphenyl	90		30-150	В



Project Name: CT MDC Lab Number: L1002832

Project Number: 19395.50 **Report Date:** 03/02/10

SAMPLE RESULTS

Lab ID: L1002832-02 Date Collected: 01/21/10 00:00

Client ID: CD-DW2, (12"), 0"-1/4" Date Received: 01/22/10
Sample Location: RESERVOIR #6 Field Prep: Not Specified

Matrix: Solid Extraction Method: EPA 3540C
Analytical Method: 1,8082 Extraction Date: 02/26/10 09:06

Analytical Date: 03/01/10 01:54 Cleanup Method1: EPA 3665A Analyst: JB Cleanup Date1: 02/28/10

Percent Solids: Results reported on an 'AS RECEIVED' basis. Cleanup Method2: EPA 3660B

Cleanup Date2: 02/28/10

ParameterResultQualifierUnitsRDLDilution FactorPCB by GC - Westborough LabAroclor 12543530ug/kg3546

			Acceptance	
Surrogate	% Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	42		30-150	А
Decachlorobiphenyl	75		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	44		30-150	В
Decachlorobiphenyl	90		30-150	В



 Project Name:
 CT MDC
 Lab Number:
 L1002832

 Project Number:
 19395.50
 Report Date:
 03/02/10

Method Blank Analysis Batch Quality Control

Analytical Method: 1,8082

Analytical Date: 02/28/10 23:15

Analyst: JB

Extraction Method: EPA 3540C
Extraction Date: 02/26/10 09:06
Cleanup Method1: EPA 3665A
Cleanup Date1: 02/28/10
Cleanup Method2: EPA 3660B
Cleanup Date2: 02/28/10

Parameter	Result	Qualifi	ier L	Jnits	RDL
PCB by GC - Westborough Lab for	sample(s):	01-02	Batch:	WG4	02062-1
Aroclor 1016	ND		ı	ug/kg	19.3
Aroclor 1221	ND		ı	ug/kg	19.3
Aroclor 1232	ND		ı	ug/kg	19.3
Aroclor 1242	ND		ı	ug/kg	19.3
Aroclor 1248	ND		ı	ug/kg	12.9
Aroclor 1254	ND		ı	ug/kg	19.3
Aroclor 1260	ND		ı	ug/kg	12.9
Aroclor 1262	ND		ı	ug/kg	6.43
Aroclor 1268	ND		·	ug/kg	6.43

			Acceptance)
Surrogate	%Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	73		30-150	Α
Decachlorobiphenyl	70		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	79		30-150	В
Decachlorobiphenyl	70		30-150	В



Lab Control Sample Analysis Batch Quality Control

Project Name: CT MDC Batch Quality Cont

Lab Number: L1002832

Report Date: 03/02/10

Parameter	LCS %Recov	ery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB by GC - Westborough Lab	Associated sample(s):	01-02	Batch:	WG402062-2	WG402062-3	3			
Aroclor 1016	100			86		40-140	15		50
Aroclor 1260	90			91		40-140	1		50

	LCS		LCSD		Acceptance	:
Surrogate	%Recovery	Qual	%Recovery	Qual	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	83		78		30-150	Α
Decachlorobiphenyl	86		79		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	95		80		30-150	В
Decachlorobiphenyl	86		69		30-150	В



Project Number:

19395.50

Project Name:CT MDCLab Number:L1002832Project Number:19395.50Report Date:03/02/10

Sample Receipt and Container Information

YES

Cooler Information

Cooler Custody Seal A Absent

Were project specific reporting limits specified?

Container Info	er Information						
Container ID	Container Type	Cooler	рН	deg C	Pres	Seal	Analysis
L1002832-01A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()
I 1002832-02A	Bag	Α	N/A	2	Υ	Absent	PCB-8082LL()



Project Name:CT MDCLab Number:L1002832Project Number:19395.50Report Date:03/02/10

GLOSSARY

Acronyms

EPA · Environmental Protection Agency.

 LCS Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD · Laboratory Control Sample Duplicate: Refer to LCS.

MS • Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD · Matrix Spike Sample Duplicate: Refer to MS.

NA · Not Applicable.

NC · Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

ND · Not detected at the reported detection limit for the sample.

NI · Not Ignitable.

RDL - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

- A Spectra identified as "Aldol Condensation Product".
- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E . Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- ${f P}$ The RPD between the results for the two columns exceeds the method-specified criteria.
- The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RDL. (Metals only.)
- **R** Analytical results are from sample re-analysis.
- **RE** Analytical results are from sample re-extraction.
- J : Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

Report Format: Data Usability Report



Project Name:CT MDCLab Number:L1002832Project Number:19395.50Report Date:03/02/10

REFERENCES

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Woods Hole Labs.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certificate/Approval Program Summary

Last revised January 11, 2010 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0574. NELAP Accredited Solid Waste/Soil.

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate.

Organic Parameters: Haloacetic Acids, Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP), Ethylene Dibromide (EDB).)

Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Calcium Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH.) Solid Waste/Soil (Inorganic Parameters: Lead in Paint, pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), Reactivity. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Volatile Organics, Acid Extractables (Phenols), 3.3'-Dichlorobenzidine, Phthalates,

Maine Department of Human Services Certificate/Lab ID: 2009024.

Drinking Water (Inorganic Parameters: SM9215B, 9221E, 9222B, 9222D, 9223B, EPA 180.1, 300.0, 353.2, SM2130B, 2320B, 4500Cl-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B,4500NO3-F, EPA 200.7, EPA 200.8, 245.1. Organic Parameters: 504.1, 524.2, SM 6251B.)

Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 350.1, 351.1, 353.2, 410.4, 420.1, Lachat 10-107-06-1-B, SM2320B, 2340B, 2510B, 2540C, 2540D, 426C, 4500Cl-D, 4500Cl-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-B, 4500Norg-C, 4500NH3-B, 4500NH3-B, 4500NH3-H, 4500NO3-F, 4500P-B.5, 4500P-E, 5210B, 5220D, 5310C, EPA 200.7, 200.8, 245.1. Organic Parameters: 608, 624.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA086.

Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Drinking Water

Inorganic Parameters: (EPA 200.8 for: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl)

(EPA 200.7 for: Ba,Be,Ca,Cd,Cr,Cu,Na,Ni) 245.1, (300.0 for: Nitrate-N, Fluoride, Sulfate)

353.2 for: Nitrate-N, Nitrite-N; SM4500NO3-F, 4500F-C, 4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, 2320B, SM2540C. SM4500H-B.

Organic Parameters: (EPA 524.2 for: Trihalomethanes, Volatile Organics)

(504.1 for: 1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane), 314.0, 332.

Microbiology Parameters: SM9215B; ENZ. SUB. SM9223; MF-SM9222D

Non-Potable Water

Inorganic Parameters:, (EPA 200.8 for: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn)

(EPA 200.7 for: Al,Sb,As,Be,Cd,Cr,Co,Cu,Fe,Pb,Mn,Mo,Ni,Se,Aq,Sr,Tl, V,Zn,Ca,Mq,Na,K)

245.1, SM4500H,B, EPA 120.1, SM2510B, 2540C, 2540B, 2340B, 2320B, 4500CL-E, 4500F-BC, 426C, SM4500NH3-BH, (EPA 350.1 for: Ammonia-N), LACHAT 10-107-06-1-B for Ammonia-N, SM4500NO3-F, 353.2 for Nitrate-N, SM4500NH3-B,C-Titr, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, 4500P-B,E, 5220D, EPA 410.4, SM 5210B, 5310C, 4500CL-D, EPA 1664, SM14 510AC, EPA 420.1

Organic Parameters: (EPA 624 for Volatile Halocarbons, Volatile Aromatics)

(608 for: Chlordane, Aldrin, Dieldrin, DDD, DDE, DDT, Heptachlor, Heptachlor Epoxide, PCBs-Water), EPA 625 for SVOC Acid Extractables and SVOC Base/Neutral Extractables, 600/4-81-045-PCB-Oil

New Hampshire Department of Environmental Services Certificate/Lab ID: 200307. NELAP Accredited.

Drinking Water (Inorganic Parameters: SM6215B, 9222B, 9223B Colilert, EPA 200.7, 200.8, 245.2, 120.1, 300.0, 314.0, SM4500CN-E, 4500H+B, 4500NO3-F, 2320B, 2510B, 2540C, 4500F-C, 5310C, 2120B, EPA 331.0. Organic Parameters: 504.1, 524.2, SM6251B.)

Non-Potable Water (Inorganic Parameters: SM9222D, 9221B, 9222B, 9221E-EC, EPA 200.7, 200.8, 245.1, 245.2, SW-846 6010B, 6020, 7196A, 7470A, SM3500-CR-D, EPA 120.1, 300.0, 350.1, 351.1, 353.2, 420.1, 1664A, SW-846 9010, 9030, 9040B, SM426C, SM2310B, 2540B, 2540D, 4500H+B, 4500NH3-H, 4500NH3-E, 4500NO2-B, 4500P-E, 4500-S2-D, 5210B, 2320B, 2540C, 4500F-C, 5310C, 5540C, LACHAT 10-117-07-1-B, LACHAT 10-107-06-1-B, LACHAT 10-107-04-1-J, LACHAT 10-117-07-1-A, SM4500CL-E, LACHAT 10-204-00-1-A, LACHAT 10-107-06-2-D. Organic Parameters: SW-846 3005A, 3015A, 3510C, 5030B, 8021B, 8260B, 8270C, 8330, EPA 624, 625, 608, SW-846 8082, 8081A.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6010B, 7196A, 7471A, 7.3.3.2, 7.3.4.2, 1010, 1030, 9010, 9012A, 9014, 9030B, 9040, 9045C, 9050C, 1311, 3005A, 3050B, 3051A. Organic Parameters: SW-846 3540C, 3545, 3580A, 5030B, 5035, 8021B, 8260B, 8270C, 8330, 8151A, 8082, 8081A.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA935. NELAP Accredited.

Drinking Water (Inorganic Parameters: SM9222B, 9221E, 9223B, 9215B, 4500NO3-F, 4500F-C, EPA 300.0, 200.7, 2540C, 2320B, 314.0, SM2120B, 2510B, 5310C, SM4500H-B, EPA 200.8, 245.2. Organic Parameters: 504.1, SM6251B, 524.2.)

Non-Potable Water (Inorganic Parameters: SM5210B, EPA 410.4, SM5220D, 4500Cl-D, EPA 300.0, SM2120B, SM4500F-BC, EPA 200.7, 351.1, LACHAT 10-107-06-2-D, EPA 353.2, SM4500NO3-F, 4500NO2-B, EPA 1664A, SM5310B, C or D, 4500-PE, EPA 420.1, SM4500P-B5+E, 2540B, 2540C, 2540D, EPA 120.1, SM2510B, SM15 426C, SM9221CE, 9222D, 9221B, 9222B, 9215B, 2310B, 2320B, 4500NH3-H, 4500-S D, EPA 350.1, SM5210B, SW-846 3015, 6020, 7470A, 5540C, 4500H-B, EPA 200.8, SM3500Cr-D, EPA 245.1, 245.2, SW-846 9040B, 3005A, EPA 6010B, 7196A, SW-846 9010B, 9030B. Organic Parameters: SW-846 8260B, 8270C, 3510C, EPA 608, 624, 625, SW-846 5030B, 8021B, 8081A, 8082, 8151A, 8330, NJ OQA-QAM-025 Rev.7.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 9040B, 3005A, 6010B, 7196A, 5030B, 9010B, 9030B, 1030, 1311, 3050B, 3051, 7471A, 9014, 9012A, 9045C, 9050A, 9065. Organic Parameters: SW-846 8021B, 8081A, 8082, 8151A, 8330, 8260B, 8270C, 1311, 1312, 3540C, 3545, 3550B, 3580A, 5035L, 5035H, NJ OQA-QAM-025 Rev.7.)

New York Department of Health Certificate/Lab ID: 11148. NELAP Accredited.

Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.2, SM5310C, EPA 314.0, 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500H-B, 4500NO3-F, 2540C, EPA 120.1, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, EPA 410.4, SM5220D, 2310B-4a, 2320B, EPA 200.7, 300.0, LACHAT 10-117-07-1A or B, SM4500Cl-E, 4500F-C, SM15 426C, EPA 350.1, LACHAT 10-107-06-1-B, SM4500NH3-H, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, LACHAT 10-107-041-C, SM4500-NO3-F, 4500-NO2-B, 4500P-E, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010B, 6020, EPA 7196A, S\M3500Cr-D, EPA 245.1, 245.2, 7470A, SM2120B, SM4500-CN-E LACHAT 10-204-00-1-A, EPA 9040B, SM4500-HB, EPA 1664A, SM5310C, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 3005A, 3015. Organic Parameters: EPA 624, 8260B, 8270C, 625, 608, 8081A, 8151A, 8330, 8082, EPA 3510C, 5030B, 9010B, 9030B.)

Solid & Hazardous Waste (Inorganic Parameters: 1010, 1030, SW-846 Ch 7 Sec 7.3, EPA 6010B, 7196A, 7471A, 9012A, 9014, 9040B, 9045C, 9065, 9050, EPA 1311, 1312, 3005A, 3050B, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8081A, 8151A, 8330, 8082, 3540C, 3545, 3546, 3580, 5030B, 5035.)

North Carolina Department of the Environment and Natural Resources <u>Certificate/Lab ID</u>: 666. <u>Organic Parameters</u>: MA-EPH, MA-VPH.

Pennsylvania Department of Environmental Protection Certificate/Lab ID: 68-03671. *NELAP Accredited. Non-Potable Water* (Organic Parameters: EPA 3510C, 5030B, 625, 624. 608, 8081A, 8082, 8151A, 8260B, 8270C, 8330)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010, 1030, 1311, 3050B, 3051, 6010B, EPA 7.3.3.2, EPA 7.3.4.2, 7196A, 7471A, 9010B, 9012A, 9014, 9040B, 9045C, 9050, 9065. Organic Parameters: 3540C, 3545, 3580A, 5035, 8021B, 8081A, 8082, 8151A, 8260B, 8270C, 8330)

Rhode Island Department of Health Certificate/Lab ID: LAO00065. *NELAP Accredited via NY-DOH.*Refer to MA-DEP Certificate for Potable and Non-Potable Water.
Refer to NY-DOH Certificate for Potable and Non-Potable Water.

Texas Commisson on Environmental Quality Certificate/Lab ID: T104704476-09-1. *NELAP Accredited*. *Non-Potable Water* (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 376.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH3-H, 4500NO2B, 4500P-E, 4500 S2⁻ D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

Utah Department of Health Certificate/Lab ID: AAMA. **NELAP Accredited.** Non-Potable Water (Inorganic Parameters: Chloride EPA 300.0)

Department of Defense Certificate/Lab ID: L2217.

Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6020, 245.1, 245.2, 7470A, 9040B, 300.0, 9251, 9038, 350.1, 353.2, 351.1, 314, 120.1, 9050A, 410.4, 9060, 1664, 420.1, LACHAT 10-107-06-1-B, SM 4500CN-E, 4500H-B, 4500CL-E, 4500F-BC, 4500SO4-E, 426C, 4500NH3-B, 4500NH3-H, 4500NO3-F, 4500NO2-B, 4500Norg-C, 4500PE, 2510B, 5540C, 5220D, 5310C, 2540B, 2540C, 2540D, 510C, 4500S2-AD, 3005A, 3015, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8330, 625, 8082, 8151A, 8081A, 3510C, 5030B.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010B, 7471A, 9040B, 9045C, 9065, 420.1, 9012A, 6860, 1311, 1312, 3050B, 9030B, 3051, 9010B, 3540C, SM 510ABC, 4500CN-CE, 2540G, SW-846 7.3, Organic Parameters: EPA 8260B, 8270C, 8330, 8082, 8081A, 8151A, 3545, 3546, 3580, 5035.)

Analytes Not Accredited by NELAP

Certification is not available by NELAP for the following analytes: **EPA 8260B**: Freon-113, 1,2,4,5-Tetramethylbenzene. **EPA 8330A**: PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **EPA 8270C**: Methyl naphthalene, Dimethyl naphthalene, Total Methylnapthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine (Azobenzene). **EPA 625**: 4-Chloroaniline. **EPA 350.1** for Ammonia in a Soil matrix.

Alpha's Terms and Conditions. See reverse side.		102110	7	Circhi	1/01/10 1/10	Mille 8	FORM NO: 01-01 (rev. 14-00T-07)	Ž,
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ANALYTICAL REPORT

Lab Number: L1014567

Client: GZA GeoEnvironmental, Inc.

1 Edgewater Drive Norwood, MA 02062

ATTN: Dave E. Leone Phone: (781) 278-5766

Project Name: RESERVOIR #6 FLOCC. TANK

Project Number: 19395.50

Report Date: 09/30/10

Certifications & Approvals: MA (M-MA086), NY NELAC (11148), CT (PH-0574), NH (2003), NJ (MA935), RI (LAO00065), ME (MA0086), PA (Registration #68-03671), USDA (Permit #S-72578), US Army Corps of Engineers, Naval FESC.



Eight Walkup Drive, Westborough, MA 01581-1019 508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



L1014567

Lab Number:

Project Name: RESERVOIR #6 FLOCC. TANK

Project Number: 19395.50 **Report Date:** 09/30/10

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1014567-01	EXP.#1,1"OUT,1"-1 1/2"	W. HARTFORD, CT	09/16/10 00:00
L1014567-02	EXP.#1,1"OUT,1 1/2"-2"	W. HARTFORD, CT	09/16/10 00:00
L1014567-03	EXP.#2,1"OUT,1"-1 1/2"	W. HARTFORD, CT	09/16/10 00:00
L1014567-04	EXP.#2,1"OUT,1 1/2"-2"	W. HARTFORD, CT	09/16/10 00:00
L1014567-05	EXP.#3,1"OUT,1/8"-1/2"	W. HARTFORD, CT	09/16/10 00:00
L1014567-06	EXP.#3,1"OUT,1"-1 1/2"	W. HARTFORD, CT	09/16/10 00:00
L1014567-07	EXP.#3,1"OUT,1 1/2"-2"	W. HARTFORD, CT	09/16/10 00:00
L1014567-08	DW 2, 1" OUT, 1"-1 1/2"	W. HARTFORD, CT	09/16/10 00:00
L1014567-09	DW 2, 1" OUT, 1 1/2"-2"	W. HARTFORD, CT	09/16/10 00:00
L1014567-10	DW 2, 12" OUT, 1/4"-3/4"	W. HARTFORD, CT	09/16/10 00:00
L1014567-11	DW 2, 16" OUT, 1/8"-1/2"	W. HARTFORD, CT	09/16/10 00:00
L1014567-12	DW 2, 24" OUT, 1/8"-1/2"	W. HARTFORD, CT	09/16/10 00:00
L1014567-13	BUS LINE, 1" OUT, 0"-1/2"	W. HARTFORD, CT	09/16/10 00:00
L1014567-14	DUPLICATE A	W. HARTFORD, CT	09/16/10 00:00
L1014567-15	DUPLICATE B	W. HARTFORD, CT	09/16/10 00:00
L1014567-16	FIELD BLANK	W. HARTFORD, CT	09/16/10 00:00
L1014567-17	EQUIPMENT BLANK #1 (START)	W. HARTFORD, CT	09/16/10 00:00
L1014567-18	EQUIPMENT BLANK #2 (FINISH)	W. HARTFORD, CT	09/16/10 00:00
L1014567-19	DECK STAIRS,1" OUT, 1/8"-1/2"	W. HARTFORD, CT	09/16/10 00:00
L1014567-20	DECK STAIRS,1" OUT, 1/2"-1"	W. HARTFORD, CT	09/16/10 00:00
L1014567-21	DECK STAIRS,3" OUT, 1/8"-1/2"	W. HARTFORD, CT	09/16/10 00:00
L1014567-22	DECK STAIRS,3" OUT, 1/2"-1"	W. HARTFORD, CT	09/16/10 00:00
L1014567-23	DECK STAIRS,6" OUT, 1/8"-1/2"	W. HARTFORD, CT	09/16/10 00:00
L1014567-24	DECK STAIRS,6" OUT, 1/2"-1"	W. HARTFORD, CT	09/16/10 00:00
L1014567-25	DECK STAIRS,12" OUT, 1/8"-1/2"	W. HARTFORD, CT	09/16/10 00:00



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 Report Date: 09/30/10

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

or additional information, produce contact chort contract at coo con coord	

Report Submission

This report replaces the report issued September 27, 2010. The PCB results have been revised on L1014567-05.

Sample Receipt

The samples were received in inappropriate containers for the PCB analysis.

For additional information, please contact Client Services at 800-624-9220

PCBs

L1014567-01 has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix, and due to the dilution required by matrix interferences encountered during the concentration of the sample.



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 Report Date: 09/30/10

Case Narrative (continued)

L1014567-03, -05, -08, -10, -11, -13, -14, and -15 have elevated detection limits due to the dilutions required by matrix interferences encountered during the concentration of the samples.

L1014567-16, -17, and -18 have elevated detection limits due to limited sample volume available for analysis. L1014567-19 has elevated detection limits due to limited sample volume available for analysis, and due to the dilution required by matrix interferences encountered during the concentration of the sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Title: Technical Director/Representative Date: 09/30/10

Elizabeth & Symmons Elizabeth Simmons

ORGANICS



PCBS



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-01

Client ID: EXP.#1,1"OUT,1"-1 1/2" Sample Location: W. HARTFORD, CT

Matrix: Solid Analytical Method: 1,8082

Analytical Date: 09/27/10 09:00

Analyst: SH Percent Solids: 98%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Annalas 4040	ND			040		_
Aroclor 1016	ND		ug/kg	612		5
Aroclor 1221	ND		ug/kg	612		5
Aroclor 1232	ND		ug/kg	612		5
Aroclor 1242	ND		ug/kg	612		5
Aroclor 1248	ND		ug/kg	408		5
Aroclor 1254	ND		ug/kg	612		5
Aroclor 1260	ND		ug/kg	408		5
Aroclor 1262	ND		ug/kg	204		5
Aroclor 1268	ND		ug/kg	204		5

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
	/# Necovery	Quanner		
2,4,5,6-Tetrachloro-m-xylene	92		30-150	Α
Decachlorobiphenyl	79		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	89		30-150	В
Decachlorobiphenyl	84		30-150	В



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-03

Client ID: EXP.#2,1"OUT,1"-1 1/2" Sample Location: W. HARTFORD, CT

Matrix: Solid
Analytical Method: 1,8082

Analytical Date: 09/24/10 11:08

Analyst: SS Percent Solids: 98%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1260	509		ug/kg	267		5

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	122		30-150	Α
Decachlorobiphenyl	119		30-150	А
2,4,5,6-Tetrachloro-m-xylene	122		30-150	В
Decachlorobiphenyl	120		30-150	В



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-03

Client ID: EXP.#2,1"OUT,1"-1 1/2" Sample Location: W. HARTFORD, CT

Matrix: Solid Analytical Method: 1,8082

Analytical Date: 09/24/10 11:08

Analyst: SS Percent Solids: 98%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1016	ND		ug/kg	401		5
Aroclor 1221	ND		ug/kg	401		5
Aroclor 1232	ND		ug/kg	401		5
Aroclor 1242	ND		ug/kg	401		5
Aroclor 1248	ND		ug/kg	267		5
Aroclor 1254	ND		ug/kg	401		5
Aroclor 1262	ND		ug/kg	134		5
Aroclor 1268	ND		ug/kg	134		5

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	122		30-150	A
Decachlorobiphenyl	119		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	122		30-150	В
Decachlorobiphenyl	120		30-150	В



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-05

Client ID: EXP.#3,1"OUT,1/8"-1/2" Sample Location: W. HARTFORD, CT

Matrix: Solid Analytical Method: 1,8082

Analytical Date: 09/24/10 11:20

Analyst: SS Percent Solids: 98%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
A-polos 4054	2400		//	404		_
Aroclor 1254	2180		ug/kg	431		5
Aroclor 1262	5410		ug/kg	144		5

			Acceptance	
Surrogate	% Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	73		30-150	Α
Decachlorobiphenyl	111		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	69		30-150	В
Decachlorobiphenyl	100		30-150	В



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-05

Client ID: EXP.#3,1"OUT,1/8"-1/2" Sample Location: W. HARTFORD, CT

Matrix: Solid
Analytical Method: 1,8082

Analytical Date: 09/24/10 11:20

Analyst: SS Percent Solids: 98%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
			_			
Aroclor 1016	ND		ug/kg	431		5
Aroclor 1221	ND		ug/kg	431		5
Aroclor 1232	ND		ug/kg	431		5
Aroclor 1242	ND		ug/kg	431		5
Aroclor 1248	ND		ug/kg	287		5
Aroclor 1260	ND		ug/kg	287		5
Aroclor 1268	ND		ug/kg	144		5

			Acceptance	
Surrogate	% Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	73		30-150	Α
Decachlorobiphenyl	111		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	69		30-150	В
Decachlorobiphenyl	100		30-150	В



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-08

Client ID: DW 2, 1" OUT, 1"-1 1/2" Sample Location: W. HARTFORD, CT

Matrix: Solid Analytical Method: 1,8082

Analytical Date: 09/25/10 20:38

Analyst: SS Percent Solids: 99%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1254	937		ug/kg	318		5

			Acceptance	
Surrogate	% Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	113		30-150	А
Decachlorobiphenyl	108		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	116		30-150	В
Decachlorobiphenyl	119		30-150	В



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-08

Client ID: DW 2, 1" OUT, 1"-1 1/2" Sample Location: W. HARTFORD, CT

Matrix: Solid Analytical Method: 1,8082

Analytical Date: 09/25/10 20:38

Analyst: SS Percent Solids: 99%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1016	ND		ug/kg	318		5
Aroclor 1221	ND		ug/kg	318		5
Aroclor 1232	ND		ug/kg	318		5
Aroclor 1242	ND		ug/kg	318		5
Aroclor 1248	ND		ug/kg	212		5
Aroclor 1260	ND		ug/kg	212		5
Aroclor 1262	ND		ug/kg	106		5
Aroclor 1268	ND		ug/kg	106		5

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	113		30-150	A
Decachlorobiphenyl	108		30-150	А
2,4,5,6-Tetrachloro-m-xylene	116		30-150	В
Decachlorobiphenyl	119		30-150	В



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-10

Client ID: DW 2, 12" OUT, 1/4"-3/4" Sample Location: W. HARTFORD, CT

Matrix: Solid Analytical Method: 1,8082

Analytical Date: 09/24/10 17:40

Analyst: SS Percent Solids: 99%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1016	ND		ug/kg	732		8
Aroclor 1221	ND		ug/kg	732		8
Aroclor 1232	ND		ug/kg	732		8
Aroclor 1242	ND		ug/kg	732		8
Aroclor 1248	ND		ug/kg	488		8
Aroclor 1254	ND		ug/kg	732		8
Aroclor 1260	ND		ug/kg	488		8
Aroclor 1262	ND		ug/kg	244		8
Aroclor 1268	ND		ug/kg	244		8

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
Surroyate	// Recovery	Qualifier		
2,4,5,6-Tetrachloro-m-xylene	137		30-150	Α
Decachlorobiphenyl	147		30-150	А
2,4,5,6-Tetrachloro-m-xylene	138		30-150	В
Decachlorobiphenyl	144		30-150	В



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-11

Client ID: DW 2, 16" OUT, 1/8"-1/2" Sample Location: W. HARTFORD, CT

Matrix: Solid Analytical Method: 1,8082

Analytical Date: 09/27/10 14:21

Analyst: SS Percent Solids: 99%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1016	ND		ug/kg	375		5
Aroclor 1221	ND		ug/kg	375		5
Aroclor 1232	ND		ug/kg	375		5
Aroclor 1242	ND		ug/kg	375		5
Aroclor 1248	ND		ug/kg	250		5
Aroclor 1254	ND		ug/kg	375		5
Aroclor 1260	ND		ug/kg	250		5
Aroclor 1262	ND		ug/kg	125		5
Aroclor 1268	ND		ug/kg	125		5

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	87		30-150	Α
Decachlorobiphenyl	106		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	92		30-150	В
Decachlorobiphenyl	97		30-150	В



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-13

Client ID: BUS LINE, 1" OUT, 0"-1/2" Sample Location: W. HARTFORD, CT

Matrix: Solid

Matrix: Solid Analytical Method: 1,8082

Analytical Date: 09/27/10 14:33

Analyst: SS Percent Solids: 99%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1016	ND		ug/kg	351		5
Aroclor 1221	ND					
Aroclor 1232	ND ND		ug/kg	351		5
Aroclor 1242	ND ND		ug/kg	351		5
			ug/kg	351		5
Aroclor 1248	ND		ug/kg	234		5
Aroclor 1254	1150		ug/kg	351		5
Arcelor 1260	ND		ug/kg	234		5
Arcelor 1262	1180		ug/kg	117		5
Aroclor 1268	ND		ug/kg	117		5

			Acceptance	
Surrogate	% Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	105		30-150	A
Decachlorobiphenyl	98		30-150	А
2,4,5,6-Tetrachloro-m-xylene	103		30-150	В
Decachlorobiphenyl	91		30-150	В



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-14
Client ID: DUPLICATE A
Sample Location: W. HARTFORD, CT

Matrix: Solid Analytical Method: 1,8082

Analytical Date: 09/27/10 12:34

Analyst: SS Percent Solids: 98%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1016	ND		ug/kg	444		5
Aroclor 1221	ND		ug/kg	444		5
Aroclor 1232	ND		ug/kg	444		5
Aroclor 1242	ND		ug/kg	444		5
Aroclor 1248	ND		ug/kg	296		5
Aroclor 1254	3060		ug/kg	444		5
Aroclor 1260	ND		ug/kg	296		5
Aroclor 1262	5870		ug/kg	148		5
Aroclor 1268	ND		ug/kg	148		5

% Recovery	Qualifier	Acceptance Criteria	Column	
142		30-150	A	
137		30-150	Α	
136		30-150	В	
122		30-150	В	
	142 137 136	142 137 136	% Recovery Qualifier Criteria 142 30-150 137 30-150 136 30-150	



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-15
Client ID: DUPLICATE B
Sample Location: W. HARTFORD, CT

Matrix: Solid Analytical Method: 1,8082

Analytical Date: 09/27/10 12:46

Analyst: SS Percent Solids: 99%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1016	ND		ug/kg	426		5
Aroclor 1221	ND		ug/kg	426		5
Aroclor 1232	ND		ug/kg	426		5
Aroclor 1242	ND		ug/kg	426		5
Aroclor 1248	ND		ug/kg	284		5
Aroclor 1254	436		ug/kg	426		5
Aroclor 1260	ND		ug/kg	284		5
Aroclor 1262	169		ug/kg	142		5
Aroclor 1268	ND		ug/kg	142		5

	Acceptance					
Surrogate	% Recovery	Qualifier	Criteria	Column		
2,4,5,6-Tetrachloro-m-xylene	50		30-150	A		
Decachlorobiphenyl	54		30-150	Α		
2,4,5,6-Tetrachloro-m-xylene	52		30-150	В		
Decachlorobiphenyl	51		30-150	В		



09/16/10 00:00

Not Specified

09/23/10 05:00

EPA 3540C

EPA 3665A

09/17/10

Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-16
Client ID: FIELD BLANK
Sample Location: W. HARTFORD, CT

Matrix: Solid
Analytical Method: 1,8082

Analytical Date: 09/24/10 15:50

Analyst: SS

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Cleanup Date1: 09/24/10
Cleanup Method2: EPA 3660B
Cleanup Date2: 09/24/10

Date Collected:

Date Received:

Extraction Method:

Cleanup Method1:

Extraction Date:

Field Prep:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1016	ND		ug/kg	588		1
Aroclor 1221	ND		ug/kg	588		1
Aroclor 1232	ND		ug/kg	588		1
Aroclor 1242	ND		ug/kg	588		1
Aroclor 1248	ND		ug/kg	392		1
Aroclor 1254	ND		ug/kg	588		1
Aroclor 1260	ND		ug/kg	392		1
Aroclor 1262	ND		ug/kg	196		1
Aroclor 1268	ND		ug/kg	196		1

			Acceptance	
Surrogate	% Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	80		30-150	A
Decachlorobiphenyl	78		30-150	А
2,4,5,6-Tetrachloro-m-xylene	83		30-150	В
Decachlorobiphenyl	81		30-150	В



09/16/10 00:00

Not Specified

09/23/10 05:00

EPA 3540C

EPA 3665A

09/24/10

09/17/10

Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-17

Client ID: EQUIPMENT BLANK #1 (START)

Sample Location: W. HARTFORD, CT

Matrix: Solid Analytical Method: 1,8082

Analytical Date: 09/24/10 16:02

Analyst: SS

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Cleanup Method2: EPA 3660B Cleanup Date2: 09/24/10

Date Collected:

Date Received:

Extraction Method:

Cleanup Method1:

Extraction Date:

Cleanup Date1:

Field Prep:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1016	ND		ug/kg	500		1
Aroclor 1221	ND		ug/kg	500		1
Aroclor 1232	ND		ug/kg	500		1
Aroclor 1242	ND		ug/kg	500		1
Aroclor 1248	ND		ug/kg	333		1
Aroclor 1254	ND		ug/kg	500		1
Aroclor 1260	ND		ug/kg	333		1
Aroclor 1262	ND		ug/kg	167		1
Aroclor 1268	ND		ug/kg	167		1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
	// Necovery	Quanner		
2,4,5,6-Tetrachloro-m-xylene	94		30-150	Α
Decachlorobiphenyl	89		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	96		30-150	В
Decachlorobiphenyl	93		30-150	В



09/16/10 00:00

Not Specified

09/23/10 05:00

EPA 3540C

EPA 3665A

09/24/10

09/17/10

Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-18

Client ID: EQUIPMENT BLANK #2 (FINISH)

Sample Location: W. HARTFORD, CT

Matrix: Solid Analytical Method: 1,8082

Analytical Date: 09/24/10 16:14

Analyst: SS

Percent Solids: Results reported on an 'AS RECEIVED' basis.

Cleanup Method2: EPA 3660B Cleanup Date2: 09/24/10

Date Collected:

Date Received:

Extraction Method:

Cleanup Method1:

Extraction Date:

Cleanup Date1:

Field Prep:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1016	ND		ug/kg	588		1
Aroclor 1221	ND		ug/kg	588		1
Aroclor 1232	ND		ug/kg	588		1
Aroclor 1242	ND		ug/kg	588		1
Aroclor 1248	ND		ug/kg	392		1
Aroclor 1254	ND		ug/kg	588		1
Aroclor 1260	ND		ug/kg	392		1
Aroclor 1262	ND		ug/kg	196		1
Aroclor 1268	ND		ug/kg	196		1

			Acceptance	
Surrogate	% Recovery	Qualifier	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	72		30-150	Α
Decachlorobiphenyl	69		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	74		30-150	В
Decachlorobiphenyl	71		30-150	В



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-19

Client ID: DECK STAIRS,1" OUT, 1/8"-1/2"

Sample Location: W. HARTFORD, CT

Matrix: Solid Analytical Method: 1,8082

Analytical Date: 09/27/10 12:58

Analyst: SS Percent Solids: 99%

Date Collected: 09/16/10 00:00 Date Received: 09/17/10 Field Prep: Not Specified Extraction Method: EPA 3540C Extraction Date: 09/23/10 05:00 Cleanup Method1: EPA 3665A Cleanup Date1: 09/24/10 Cleanup Method2: EPA 3660B Cleanup Date2: 09/24/10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB by GC - Westborough Lab						
Aroclor 1016	ND		ug/kg	836		8
Aroclor 1221	ND		ug/kg	836		8
Aroclor 1232	ND		ug/kg	836		8
Aroclor 1242	ND		ug/kg	836		8
Aroclor 1248	ND		ug/kg	557		8
Aroclor 1254	ND		ug/kg	836		8
Aroclor 1260	ND		ug/kg	557		8
Aroclor 1262	446		ug/kg	279		8
Aroclor 1268	ND		ug/kg	279		8

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	32		30-150	Α
Decachlorobiphenyl	48		30-150	A
2,4,5,6-Tetrachloro-m-xylene	38		30-150	В
Decachlorobiphenyl	46		30-150	В



L1014567

Lab Number:

Project Name: RESERVOIR #6 FLOCC. TANK

Project Number: 19395.50 **Report Date:** 09/30/10

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082

Analytical Date: 09/24/10 11:45

Analyst: SS

Extraction Method: EPA 3540C
Extraction Date: 09/23/10 05:00
Cleanup Method1: EPA 3665A
Cleanup Date1: 09/24/10
Cleanup Method2: EPA 3660B
Cleanup Date2: 09/24/10

Parameter	Result	Qualifier	Units	RL	MDL	
PCB by GC - Westborough Lab for	sample(s):	03,05,08,10	-11,13-19	Batch: WG43	3794-1	
Aroclor 1016	ND		ug/kg	60.0		
Aroclor 1221	ND		ug/kg	60.0		
Aroclor 1232	ND		ug/kg	60.0		
Aroclor 1242	ND		ug/kg	60.0		
Aroclor 1248	ND		ug/kg	40.0		
Aroclor 1254	ND		ug/kg	60.0		
Aroclor 1260	ND		ug/kg	40.0		
Aroclor 1262	ND		ug/kg	20.0		
Aroclor 1268	ND		ug/kg	20.0		

	Acceptance						
Surrogate	%Recovery	Qualifier	Criteria	Column			
2,4,5,6-Tetrachloro-m-xylene	100		30-150	Α			
Decachlorobiphenyl	96		30-150	Α			
2,4,5,6-Tetrachloro-m-xylene	125		30-150	В			
Decachlorobiphenyl	117		30-150	В			



Project Name: RESERVOIR #6 FLOCC. TANK

Project Number: 19395.50

Report Date: 09/30/10

Method Blank Analysis Batch Quality Control

Analytical Method:

1,8082

Analytical Date:

09/27/10 07:35

Analyst:

SH

Extraction Method: EPA 3540C

L1014567

Extraction Date:

Lab Number:

09/24/10 15:00

Cleanup Method1: EPA 3665A Cleanup Date1: Cleanup Method2: EPA 3660B

09/26/10

Cleanup Date2:

09/26/10

Parameter	Result	Qu	alifier	Units	RL	MDL
PCB by GC - Westborough Lab for	sample(s):	01	Batch:	WG434152-1		
Aroclor 1016	ND			ug/kg	20.0	
Aroclor 1221	ND			ug/kg	20.0	
Aroclor 1232	ND			ug/kg	20.0	
Aroclor 1242	ND			ug/kg	20.0	
Aroclor 1248	ND			ug/kg	13.3	
Aroclor 1254	ND			ug/kg	20.0	
Aroclor 1260	ND			ug/kg	13.3	
Aroclor 1262	ND			ug/kg	6.67	
Aroclor 1268	ND			ug/kg	6.67	

	Acceptance							
Surrogate	%Recovery	Qualifier	Qualifier Criteria					
0.450 T + 11	70		00.450					
2,4,5,6-Tetrachloro-m-xylene	73		30-150	Α				
Decachlorobiphenyl	69		30-150	Α				
2,4,5,6-Tetrachloro-m-xylene	88		30-150	В				
Decachlorobiphenyl	71		30-150	В				



Lab Control Sample Analysis Batch Quality Control

Project Name: RESERVOIR #6 FLOCC. TANK

Project Number: 19395.50

Lab Number: L1014567

Report Date: 09/30/10

Parame	eter	LC %Reco		LCSD %Recove	y Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB by	GC - Westborough Lab	Associated sample(s): 03,05,08,10)-11,13-19 Bato	n: WG433794	l-2 WG433794-3			
Aroc	lor 1016	9	3	99		40-140	6		50
Aroc	lor 1260	9	2	95		40-140	3		50

	LCS		LCSD		Acceptance		
Surrogate	%Recovery	Qual	%Recovery	Qual	Criteria	Column	
2,4,5,6-Tetrachloro-m-xylene	101		103		30-150	Α	
Decachlorobiphenyl	95		98		30-150	Α	
2,4,5,6-Tetrachloro-m-xylene	117		118		30-150	В	
Decachlorobiphenyl	107		108		30-150	В	

PCB by GC - Westborough Lab Associated sample(s): 01 Batch: WG434152-2 WG434152-3											
Aroclor 1016	111		117	40-140	5	50					
Aroclor 1260	115		113	40-140	2	50					

	LCS		LCSD		Acceptance	;
Surrogate	%Recovery Qu		%Recovery	Qual	Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	119		112		30-150	А
Decachlorobiphenyl	119		116		30-150	Α
2,4,5,6-Tetrachloro-m-xylene	77		73		30-150	В
Decachlorobiphenyl	62		60		30-150	В



INORGANICS & MISCELLANEOUS



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 Report Date: 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-01 Date Collected: 09/16/10 00:00

Client ID: EXP.#1,1"OUT,1"-1 1/2" Date Received: 09/17/10
Sample Location: W. HARTFORD, CT Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry -	· Westborough Lab)								
Solids, Total	98		%	0.10	NA	1	-	09/21/10 13:40	30,2540G	AW



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 Report Date: 09/30/10

SAMPLE RESULTS

 Lab ID:
 L1014567-03
 Date Collected:
 09/16/10 00:00

 Client ID:
 EXP.#2,1"OUT,1"-1 1/2"
 Date Received:
 09/17/10

Client ID: EXP.#2,1"OUT,1"-1 1/2" Date Received: 09/17/10
Sample Location: W. HARTFORD, CT Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry -	Westborough Lab	•								
Solids, Total	98		%	0.10	NA	1	-	09/21/10 13:40	30,2540G	AW



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 Report Date: 09/30/10

SAMPLE RESULTS

 Lab ID:
 L1014567-05
 Date Collected:
 09/16/10 00:00

 Client ID:
 EXP.#3,1"OUT,1/8"-1/2"
 Date Received:
 09/17/10

Client ID: EXP.#3,1"OUT,1/8"-1/2" Date Received: 09/17/10
Sample Location: W. HARTFORD, CT Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry	- Westborough Lab									
Solids, Total	98		%	0.10	NA	1	-	09/21/10 13:40	30,2540G	AW



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 Report Date: 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-08 Date Collected: 09/16/10 00:00

Client ID: DW 2, 1" OUT, 1"-1 1/2" Date Received: 09/17/10
Sample Location: W. HARTFORD, CT Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry	- Westborough Lab									
Solids, Total	99		%	0.10	NA	1	-	09/21/10 13:40	30,2540G	AW



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-10 Date Collected: 09/16/10 00:00

Client ID: DW 2, 12" OUT, 1/4"-3/4" Date Received: 09/17/10 Sample Location: W. HARTFORD, CT Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry	- Westborough Lab									
Solids, Total	99		%	0.10	NA	1	-	09/21/10 13:40	30,2540G	AW



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-11 Date Collected: 09/16/10 00:00

Client ID: DW 2, 16" OUT, 1/8"-1/2" Date Received: 09/17/10
Sample Location: W. HARTFORD, CT Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry -	Westborough Lab)								
Solids, Total	99		%	0.10	NA	1	-	09/21/10 13:40	30,2540G	AW



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-13 Date Collected: 09/16/10 00:00

Client ID: BUS LINE, 1" OUT, 0"-1/2" Date Received: 09/17/10 Sample Location: W. HARTFORD, CT Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry	- Westborough Lab									
Solids, Total	99		%	0.10	NA	1	-	09/21/10 13:40	30,2540G	AW



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-14 Date Collected: 09/16/10 00:00

Client ID: DUPLICATE A Date Received: 09/17/10 Sample Location: W. HARTFORD, CT Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry	- Westborough Lab)								
Solids, Total	98		%	0.10	NA	1	-	09/21/10 13:40	30,2540G	AW



Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 **Report Date:** 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-15 Date Collected: 09/16/10 00:00

Client ID: DUPLICATE B Date Received: 09/17/10 Sample Location: W. HARTFORD, CT Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry -	Westborough Lab)								
Solids, Total	99		%	0.10	NA	1	-	09/21/10 13:40	30,2540G	AW



09/16/10 00:00

Date Collected:

Project Name: RESERVOIR #6 FLOCC. TANK Lab Number: L1014567

Project Number: 19395.50 Report Date: 09/30/10

SAMPLE RESULTS

Lab ID: L1014567-19

DECK STAIRS,1" OUT, 1/8"-1/2" Client ID: Date Received:

09/17/10 Sample Location: W. HARTFORD, CT Not Specified Field Prep:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - V	Westborough Lab)								
Solids, Total	99		%	0.10	NA	1	-	09/21/10 13:40	30,2540G	AW



Lab Duplicate Analysis
Batch Quality Control

Project Name: RESERVOIR #6 FLOCC. TANK

Lab Number:

L1014567

Project Number: 19395.50

Report Date:

09/30/10

Parameter	Native Sample	Duplicate Sample	Units	RPD Qu	ıal RPD Limits
General Chemistry - Westborough Lab Associ ID: DUP Sample	ciated sample(s): 01,03,05,08,10-11,	13-15,19 QC Batch ID:	WG433431-1	QC Sample	: L1014378-01 Client
Solids, Total	95	94	%	1	20



Project Name: RESERVOIR #6 FLOCC. TANK

Lab Number: L1014567 **Report Date:** 09/30/10 Project Number: 19395.50

Sample Receipt and Container Information

YES Were project specific reporting limits specified?

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal

Cooler

Α Absent

Container Info	ormation			Temp			
Container ID	Container Type	Cooler	рН	deg C	Pres	Seal	Analysis(*)
L1014567-01A	Bag	Α	N/A	3.1	Υ	Absent	TS(7),PCB-8082LL(14)
L1014567-02A	Bag	Α	N/A	3.1	Υ	Absent	HOLD(14)
L1014567-03A	Bag	Α	N/A	3.1	Υ	Absent	TS(7),PCB-8082LL(14)
L1014567-04A	Bag	Α	N/A	3.1	Υ	Absent	HOLD(14)
L1014567-05A	Bag	Α	N/A	3.1	Υ	Absent	TS(7),PCB-8082LL(14)
L1014567-06A	Bag	Α	N/A	3.1	Υ	Absent	HOLD(14)
L1014567-07A	Bag	Α	N/A	3.1	Υ	Absent	HOLD(14)
L1014567-08A	Bag	Α	N/A	3.1	Υ	Absent	TS(7),PCB-8082LL(14)
L1014567-09A	Bag	Α	N/A	3.1	Υ	Absent	HOLD(14)
L1014567-10A	Bag	Α	N/A	3.1	Υ	Absent	TS(7),PCB-8082LL(14)
L1014567-11A	Bag	Α	N/A	3.1	Υ	Absent	TS(7),PCB-8082LL(14)
L1014567-12A	Bag	Α	N/A	3.1	Υ	Absent	HOLD(14)
L1014567-13A	Bag	Α	N/A	3.1	Υ	Absent	TS(7),PCB-8082LL(14)
L1014567-14A	Bag	Α	N/A	3.1	Υ	Absent	TS(7),PCB-8082LL(14)
L1014567-15A	Bag	Α	N/A	3.1	Υ	Absent	TS(7),PCB-8082LL(14)
L1014567-16A	Bag	Α	N/A	3.1	Υ	Absent	PCB-8082LL(14)
L1014567-17A	Bag	Α	N/A	3.1	Υ	Absent	PCB-8082LL(14)
L1014567-18A	Bag	Α	N/A	3.1	Υ	Absent	PCB-8082LL(14)
L1014567-19A	Bag	Α	N/A	3.1	Υ	Absent	TS(7),PCB-8082LL(14)
L1014567-20A	Bag	Α	N/A	3.1	Υ	Absent	HOLD(14)
L1014567-21A	Bag	Α	N/A	3.1	Υ	Absent	HOLD(14)
L1014567-22A	Bag	Α	N/A	3.1	Υ	Absent	HOLD(14)
L1014567-23A	Bag	Α	N/A	3.1	Υ	Absent	HOLD(14)
L1014567-24A	Bag	Α	N/A	3.1	Υ	Absent	HOLD(14)
L1014567-25A	Bag	Α	N/A	3.1	Υ	Absent	HOLD(14)



Project Name:RESERVOIR #6 FLOCC. TANKLab Number:L1014567Project Number:19395.50Report Date:09/30/10

GLOSSARY

Acronyms

EPA - Environmental Protection Agency.

LCS Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD · Laboratory Control Sample Duplicate: Refer to LCS.

MDL • Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS • Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD · Matrix Spike Sample Duplicate: Refer to MS.

NA · Not Applicable.

NC • Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI · Not Ignitable.

RL • Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

- A Spectra identified as "Aldol Condensation Product".
- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- **D** Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.
- ${f P}$ The RPD between the results for the two columns exceeds the method-specified criteria.
- Q The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- **R** Analytical results are from sample re-analysis.

Report Format: Data Usability Report



Project Name:RESERVOIR #6 FLOCC. TANKLab Number:L1014567Project Number:19395.50Report Date:09/30/10

Data Qualifiers

RE - Analytical results are from sample re-extraction.

J Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND • Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report



Project Name:RESERVOIR #6 FLOCC. TANKLab Number:L1014567Project Number:19395.50Report Date:09/30/10

REFERENCES

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997.

30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certificate/Approval Program Summary

Last revised July 19, 2010 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0574. NELAP Accredited Solid Waste/Soil.

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate. Organic Parameters: Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP), Ethylene Dibromide (EDB), 1,4-Dioxane (Mod 8270). Microbiology Parameters: Total Coliform-MF mEndo (SM9222B), Total Coliform – Colilert (SM9223 P/A), E. Coli. – Colilert (SM9223 P/A), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D))

Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, TPH (HEM/SGT), Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH. Microbiology Parameters: Total Coliform – MF mEndo (SM9222B), Total Coliform – MTF (SM9221B), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform – A-1 Broth (SM9221E).)

Solid Waste/Soil (Inorganic Parameters: pH, Sulfide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), SPLP Leach (1312 metals only), Reactivity. Organic Parameters: PCBs, PCBs in Oil, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Volatile Organics, Acid Extractables (Phenols), 3.3'-Dichlorobenzidine, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Maine Department of Human Services Certificate/Lab ID: 2009024.

Drinking Water (Inorganic Parameters: SM9215B, 9222D, 9223B, EPA 180.1, 300.0, 353.2, SM2130B, 2320B, 4500Cl-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B, 4500NO3-F, EPA 200.7, EPA 200.8, 245.1, EPA 300.0. Organic Parameters: 504.1, 524.2.)

Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 350.1, 351.1, 353.2, 410.4, 420.1, Lachat 10-107-06-1-B, SM2320B, 2340B, 2510B, 2540C, 2540D, 426C, 4500Cl-D, 4500Cl-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-B, 4500Norg-C, 4500NH3-B, 4500NH3-G, 4500NH3-H, 4500NO3-F, 4500P-B.5, 4500P-E, 5210B, 5220D, 5310C, EPA 200.7, 200.8, 245.1. Organic Parameters: 608, 624, ME DRO, ME GRO, MA EPH, MA VPH.)

Solid Waste/Soil (Organic Parameters: ME DRO, ME GRO, MA EPH, MA VPH.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA086.

Drinking Water

Inorganic Parameters: (EPA 200.8 for: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl)

(EPA 200.7 for: Ba,Be,Ca,Cd,Cr,Cu,Na,Ni) 245.1, (300.0 for: Nitrate-N, Fluoride, Sulfate)

353.2 for: Nitrate-N, Nitrite-N; SM4500NO3-F, 4500F-C, 4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, 2320B, SM2540C, SM4500H-B.

Organic Parameters: (EPA 524.2 for: Trihalomethanes, Volatile Organics)

(504.1 for: 1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane), 314.0, 332.

Microbiology Parameters: SM9215B; ENZ. SUB. SM9223; MF-SM9222D

Non-Potable Water

Inorganic Parameters:, (EPA 200.8 for: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn)

(EPA 200.7 for: Al,Sb,As,Be,Cd,Cr,Co,Cu,Fe,Pb,Mn,Mo,Ni,Se,Ag,Sr,Ti,Tl, V,Zn,Ca,Mg,Na,K)

245.1, SM4500H,B, EPA 120.1, SM2510B, 2540C, 2540B, 2340B, 2320B, 4500CL-E, 4500F-BC, 426C, SM4500NH3-BH, (EPA 350.1 for: Ammonia-N), LACHAT 10-107-06-1-B for Ammonia-N, SM4500NO3-F, 353.2 for Nitrate-N, SM4500NH3-B,C-Titr, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, 4500P-B,E, 5220D, EPA 410.4, SM 5210B,

5310C, 4500CL-D, EPA 1664, SM14 510AC, EPA 420, SM4500-CN-CE, SM2540D.

Organic Parameters: (EPA 624 for Volatile Halocarbons, Volatile Aromatics)

(608 for: Chlordane, Aldrin, Dieldrin, DDD, DDE, DDT, Heptachlor, Heptachlor Epoxide, PCBs-Water), EPA 625 for SVOC Acid Extractables and SVOC Base/Neutral Extractables, 600/4-81-045-PCB-Oil

New Hampshire Department of Environmental Services Certificate/Lab ID: 200307. NELAP Accredited.

Drinking Water (Inorganic Parameters: SM6215B, 9222B, 9223B Colilert, EPA 200.7, 200.8, 245.2, 120.1, 300.0, 314.0, SM4500CN-E, 4500H+B, 4500NO3-F, 2320B, 2510B, 2540C, 4500F-C, 5310C, 2120B, EPA 331.0. Organic Parameters: 504.1, 524.2, SM6251B.)

Non-Potable Water (Inorganic Parameters: SM9222D, 9221B, 9222B, 9221E-EC, EPA 200.7, 200.8, 245.1, 245.2, SW-846 6010B, 6020, 7196A, 7470A, SM3500-CR-D, EPA 120.1, 300.0, 350.1, 351.1, 353.2, 420.1, 1664A, SW-846 9010, 9030, 9040B, SM426C, SM2310B, 2540B, 2540D, 4500H+B, 4500NH3-H, 4500NH3-E, 4500NO2-B, 4500P-E, 4500-S2-D, 5210B, 2320B, 2540C, 4500F-C, 5310C, 5540C, LACHAT 10-117-07-1-B, LACHAT 10-107-06-1-B, LACHAT 10-107-04-1-J, LACHAT 10-117-07-1-A, SM4500CL-E, LACHAT 10-204-00-1-A, LACHAT 10-107-06-2-D. Organic Parameters: SW-846 3005A, 3015A, 3510C, 5030B, 8021B, 8260B, 8270C, 8330, EPA 624, 625, 608, SW-846 8082, 8081A.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6010B, 7196A, 7471A, 7.3.3.2, 7.3.4.2, 1010, 1030, 9010, 9012A, 9014, 9030B, 9040, 9045C, 9050C, 1311, 3005A, 3050B, 3051A. Organic Parameters: SW-846 3540C, 3545, 3580A, 5030B, 5035, 8021B, 8260B, 8270C, 8330, 8151A, 8082, 8081A.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA935. NELAP Accredited.

Drinking Water (Inorganic Parameters: SM9222B, 9221E, 9223B, 9215B, 4500NO3-F, 4500F-C, EPA 300.0, 200.7, 2540C, 2320B, 314.0, SM2120B, 2510B, 5310C, SM4500H-B, EPA 200.8, 245.2. Organic Parameters: 504.1, SM6251B, 524.2.)

Non-Potable Water (Inorganic Parameters: SM5210B, EPA 410.4, SM5220D, 4500Cl-D, EPA 300.0, SM2120B, SM4500F-BC, EPA 200.7, 351.1, LACHAT 10-107-06-2-D, EPA 353.2, SM4500NO3-F, 4500NO2-B, EPA 1664A, SM5310B, C or D, 4500-PE, EPA 420.1, SM4500P-B5+E, 2540B, 2540C, 2540D, EPA 120.1, SM2510B, SM15 426C, SM9221CE, 9222D, 9221B, 9222B, 9215B, 2310B, 2320B, 4500NH3-H, 4500-S D, EPA 350.1, SM5210B, SW-846 3015, 6020, 7470A, 5540C, 4500H-B, EPA 200.8, SM3500Cr-D, EPA 245.1, 245.2, SW-846 9040B, 3005A, EPA 6010B, 7196A, SW-846 9010B, 9030B. Organic Parameters: SW-846 8260B, 8270C, 3510C, EPA 608, 624, 625, SW-846 5030B, 8021B, 8081A, 8082, 8151A, 8330, NJ OQA-QAM-025 Rev.7.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 9040B, 3005A, 6010B, 7196A, 5030B, 9010B, 9030B, 1030, 1311, 3050B, 3051, 7471A, 9014, 9012A, 9045C, 9050A, 9065. Organic Parameters: SW-846 8021B, 8081A, 8082, 8151A, 8330, 8260B, 8270C, 1311, 1312, 3540C, 3545, 3550B, 3580A, 5035L, 5035H, NJ OQA-QAM-025 Rev.7.)

New York Department of Health Certificate/Lab ID: 11148. NELAP Accredited.

Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.2, SM5310C, EPA 314.0, 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500H-B, 4500NO3-F, 2540C, EPA 120.1, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, EPA 410.4, SM5220D, 2310B-4a, 2320B, EPA 200.7, 300.0, LACHAT 10-117-07-1A or B, SM4500Cl-E, 4500F-C, SM15 426C, EPA 350.1, LACHAT 10-107-06-1-B, SM4500NH3-H, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, LACHAT 10-107-041-C, SM4500-NO3-F, 4500-NO2-B, 4500P-E, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010B, 6020, EPA 7196A, S\M3500Cr-D, EPA 245.1, 245.2, 7470A, SM2120B, SM4500-CN-E LACHAT 10-204-00-1-A, EPA 9040B, SM4500-HB, EPA 1664A, SM5310C, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 3005A, 3015. Organic Parameters: EPA 624, 8260B, 8270C, 625, 608, 8081A, 8151A, 8330, 8082, EPA 3510C, 5030B, 9010B, 9030B.)

Solid & Hazardous Waste (Inorganic Parameters: 1010, 1030, SW-846 Ch 7 Sec 7.3, EPA 6010B, 7196A, 7471A, 9012A, 9014, 9040B, 9045C, 9065, 9050, EPA 1311, 1312, 3005A, 3050B, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8081A, 8151A, 8330, 8082, 3540C, 3545, 3546, 3580, 5030B, 5035.)

North Carolina Department of the Environment and Natural Resources <u>Certificate/Lab ID</u>: 666. <u>Organic Parameters</u>: MA-EPH, MA-VPH.

Pennsylvania Department of Environmental Protection Certificate/Lab ID: 68-03671. *NELAP Accredited. Non-Potable Water* (Organic Parameters: EPA 3510C, 5030B, 625, 624. 608, 8081A, 8082, 8151A, 8260B, 8270C, 8330)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010, 1030, 1311, 3050B, 3051, 6010B, EPA 7.3.3.2, EPA 7.3.4.2, 7196A, 7471A, 9010B, 9012A, 9014, 9040B, 9045C, 9050, 9065. Organic Parameters: 3540C, 3545, 3580A, 5035, 8021B, 8081A, 8082, 8151A, 8260B, 8270C, 8330)

Rhode Island Department of Health Certificate/Lab ID: LAO00065. NELAP Accredited via NY-DOH.

Refer to MA-DEP Certificate for Potable and Non-Potable Water.

Refer to NY-DOH Certificate for Potable and Non-Potable Water.

Texas Commisson on Environmental Quality Certificate/Lab ID: T104704476-09-1. **NELAP Accredited.** Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 376.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH3-H, 4500NO2B, 4500P-E, 4500 S2⁻ D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

Department of Defense Certificate/Lab ID: L2217.

Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6020, 245.1, 245.2, 7470A, 9040B, 300.0, 9251, 9038, 350.1, 353.2, 351.1, 120.1, 9050A, 410.4, 9060, 1664, 420.1, LACHAT 10-107-06-1-B, SM 4500CN-E, 4500H-B, 4500CL-E, 4500F-BC, 4500SO4-E, 426C, 4500NH3-B, 4500NH3-H, 4500NO3-F, 4500NO2-B, 4500Norg-C, 4500PE, 2510B, 5540C, 5220D, 5310C, 2540B, 2540C, 2540D, 510C, 4500S2-AD, 3005A, 3015, 9010B, 9030B. Organic Parameters: EPA 8260B, 8270C, 8330, 625, 8082, 8151A, 8081A, 3510C, 5030B, MassDEP EPH, MassDEP VPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010B, 7471A, 9040B, 9045C, 9065, 420.1, 9012A, 6860, 1311, 1312, 3050B, 9030B, 3051, 9010B, 3540C, SM 510ABC, 4500CN-CE, 2540G, SW-846 7.3, Organic Parameters: EPA 8260B, 8270C, 8330, 8082, 8081A, 8151A, 3545, 3546, 3580, 5035, MassDEP EPH, MassDEP VPH.)

Analytes Not Accredited by NELAP

Certification is not available by NELAP for the following analytes: **EPA 8260B**: Freon-113, 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene. **EPA 8330A**: PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **EPA 8270C**: Methyl naphthalene, Dimethyl naphthalene, Total Methylnapthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine (Azobenzene). **EPA 625**: 4-Chloroaniline. **EPA 350.1** for Ammonia in a Soil matrix.

Container Type & Preservative A Preservative A Date/Time Received By: Date/Time Pli 2/10/1/05 Pli 2/	Dw 2 12 out 1/2-2"	6 Exp. "> ('out) 1'-1/2' 7 Exp. #3 ("out 'i2'-2") 8 Dw2, 1"out "-1/2"	Cho, #2	2 txp. #2 "out "-1"2"	Sample ID Collection Sample ID Date Time Matrix	Date Due: 9 2	ALPHA Quote #: Turn-Around Time O Yes O No O Yes O No	CHAIN OF CUSTODY PAGE 1 OF 25 Date Rec'd in Lab: 9 7 10 ALF WESTBORO, MA WESTBORO, MA TEL: 508-832-3300 TEL: 508-832-3300 FAX: 508-832-3288 Client: 6 2 4 Project Location: W. H. Thulet Regulatory Requirements/Report Limits State /Fed Program. Address: A Edge water David Project Manager: David E Leone W EPH (SCAT State /Fed Program.
Date	HOCT W	Hord	HOLD ROW	/ HOLD /	Sample Specific Comments	NDLING	ONABLE CONFIDENCE PROTO- rotocols) Required?	erables Elling Information Condend Conden

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Date/Time start until any ambiguities are resolved All samples submitted are subject to Alpha's Terms and Conditions. 9/17/16 1755 See reverse side.	Please print clearly, legibly and com- pletely. Samples can not be logged	L RON	RUN	RON	الرهم ا	7,000		/ HOCT	(RUD)	nments	Preservation C Lab to do	eded	SAMPLE HANDLING TABLE	Are MCP Analytical Methods Required? Are CT RCP (Reasonable Confidence Protocols) Required?	Sumptive Certainty CT reasonable confidence proto-		ia		□ Same as Client info PO #: /9₹95.5€	

Received By: Date/Time 3 .9 .0 1055	PLEASE ANSWER QUESTIONS ABOVEI Container Type Preservative Preservative Preservative	24 Rick Struss 12" out 12" -1" 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	23 Nack Staises, 640ct 48"-42"	Peckstaws 3 but 18"-	Ducksturs 1" out 42" - 1"	18) Allo XX Just 1, 24 1, 24 1, 18	Sample ID Collection Sample Sampler's Q	ments/Detection Limits:	Time:	Phone: 781-278-5766 Full March March Mark Confidence Protocols) Required? Fig. 1278-5766 Full March	na nop pres	Project Manager: Duvid E. Leone & EPET	Project Location: W. Harfard CT Regulatory Requi	Project Name: RSS-223288 Project Name: RSS-223288 Project Name: RSS-223288	CHAIN OF CUSTODY FAGE 5 OF 3 Date Rec'd in Lab: $9/17/10$ ALPHA Job #:
In and turnaround time clock will not start until any ambiguities are resolved All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.	Please print clearly, legibly and com- pletely. Samples can not be logged				D		Sample Specific Comments	eded do tion do	SAMPLE HANDLING A		CONFIDENCE PROTO-			ation 19395.50	L1014567